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Instructions for knowledge, operation, maintenance and repairing for

„Antitank grenade and explosive bomb launcher, AG – 9M”

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Part I

Instructions of knowledge

Chapter. 1 Description and field of application

1.1. Description

AG – 9M antitank grenade launcher is a recoilless, reactive – dynamic weapon, with smooth barrel, launching an active – reactive hollow round, with explosive bomb.

The launcher has no recoil, since a quantity of gases are exhausted backwards, through nozzle, thus occurring a reaction force that annihilating the recoil force.

The grenade launcher is composed of the following main components (fig. 1):

- barrel with breechblock;
- holder;
- electrical firing mechanism;
- sight mechanism, optical and mechanical type;
- kit of spare parts, tools, accessories;
- packing case.

The AOAG – 9M sight mechanism is a mixed type with two telescopes, one for direct fire, with hollow round, and the other for indirect fire, with round with explosive bomb.

For the units of landing force the launcher is equipped with a detachable wheel carrier; this is the launcher AG – 9MD (fig. 1.a).

The launcher can be also delivered on a land car, together with 12 hollow rounds, and 12 explosive rounds.

3 men operate the launcher: gunner, loader and ammunition feeder.

1.2. Field of application

The antitank grenade on carrier launcher, AG – 9M type, is a strong means of fire of infantry subunits and landing force.

The launcher is designed for destroying the tanks, truck-borne cannons, any type of car and other armored mean of fire of the enemy. Besides, the launcher can be used also for destroying the living force and the fire means of enemy, existing in wooden and earth buildings, of light type or brick buildings.

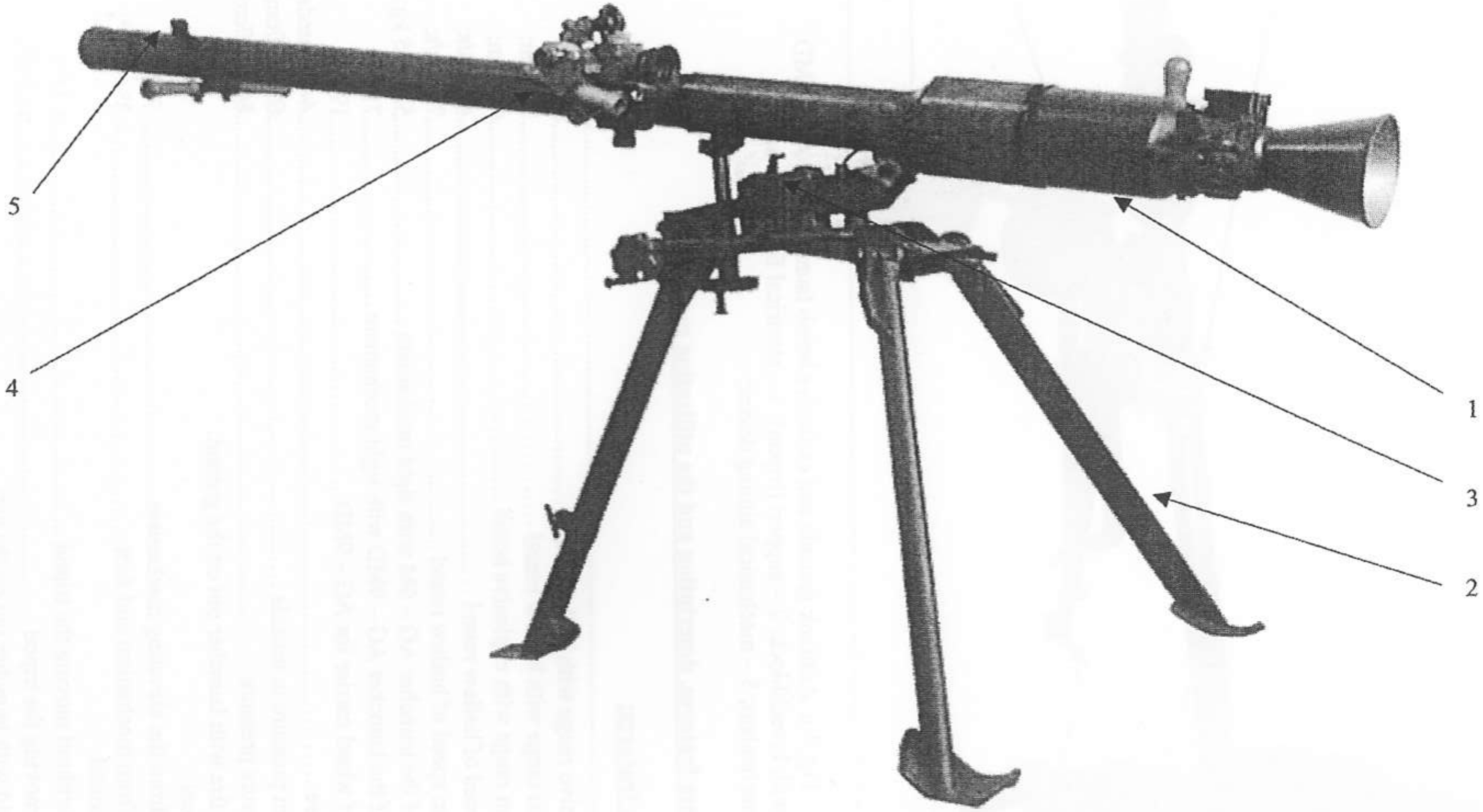


Fig. 1. Antitank grenade and explosive bomb launcher type AG – 9M;
1 – barrel with breechblock; 2 – tripod; 3 – electrical firing mechanism; 4 – sight mechanism; 5 – mechanical aiming device.

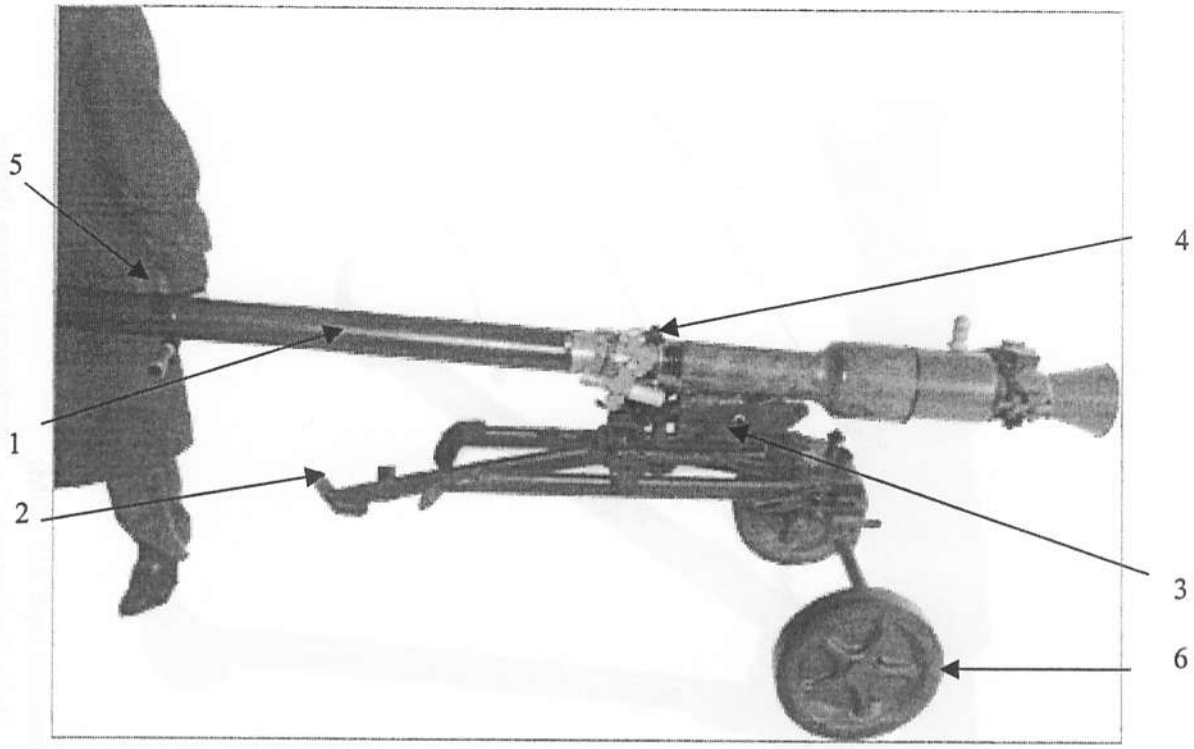


Fig. 1.a. Antitank grenade and explosive bomb launcher type AG – 9MD:
1 – barrel with breechblock; 2 – support (tripod); 3 – electrical firing mechanism;
4 – sight mechanism; 5 – mechanical aiming device;

Chapter. II Main features, description and the utilization method

2.1. Main features:

• caliber	∅ 73 mm;
• the effective range with hollow round	800 m;
• maximum range with hollow round	1300 m;
• maximum range with explosive bomb	4500 m;
• initial speed of hollow round	435 m/s;
• maximum speed of hollow round	700 m/s;
• weight of the launcher AG – 9M with sight mechanism	52± 1,5 kg;
• weight of the launcher AG – 9MD with sight mechanism	71 kg;
• weight of wheel carrier for AG – 9MD	19 kg;
• rate of fire	4÷6 rounds/min;
• maximum pressure in muzzle	600 kgf/cm^2;
• overpressure pressure	860 kgf/cm^2;
• range of fire with launcher put on the ground:	
vertical	
- from the elevating mechanism	7°40′;
- from mechanism and foot	– 3°÷ +25°;
horizontal	
- without moving the tripod	± 15°;
- moving the tripod	n x 360°;
• firing field with launcher put on the car:	
vertical	-3°÷ +27°;
horizontal (for firing tripod)	± 30°;

- length of the launcher ....2110 mm;
- maximum length of the launcher in fight position ....900 mm;
- height of barrel shaft on tripod:
  - minimum ....399 mm;
  - maximum ....850 mm;
- dangerous area, behind the launcher ....90° x 30 m;
- scattering data of hollow rounds:
  - $X_{med} = 500$ m;
  - $A_p^b \le 0,5$;
  - $A_p^d \le 0,5$;
- scattering data of explosive rounds:
  - $A_p^b / X_{med} \le 1/140$;
  - $A_p^d / X_{med} \le 1/500$;
- lifetime of barrel..min 500 rounds;
- sight mechanism AOAG – 9M with telescope for direct and indirect fire
  - magnifying power:
    - - telescope for direct aiming 3x;
    - - telescope for indirect aiming 2,55x;
  - field of view:
    - - telescope for direct aiming ....18°;
    - - telescope for indirect aiming ....9°;
- overall dimensions of sight mechanism...210x148x200 mm;
- net weight of sight mechanism ....max 2,7 kg;
- delivery weight of mechanism .... max 10,5 kg.

2.2. Description and operation of subassemblies

2.2.1. Assembled barrel

Barrel is designed for conducting on trajectory and for exhaustion of gases resulting from combustion of propelling change. Barrel (fig. 2) has three distinct areas:

- the proper barrel;
- the chamber;
- breech piece.

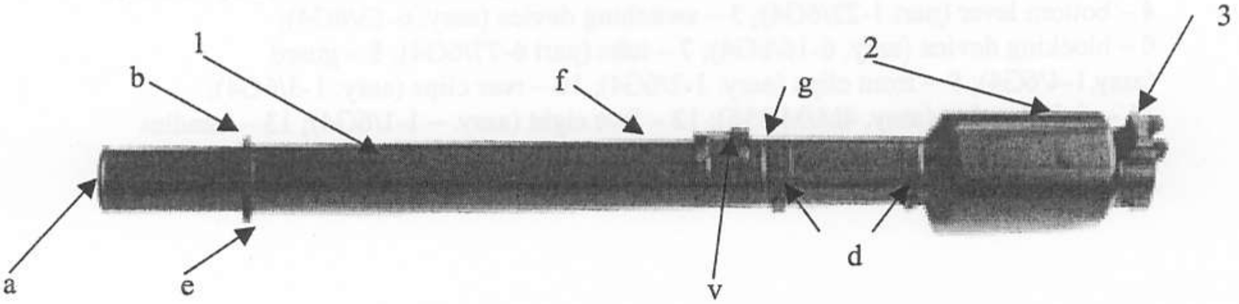
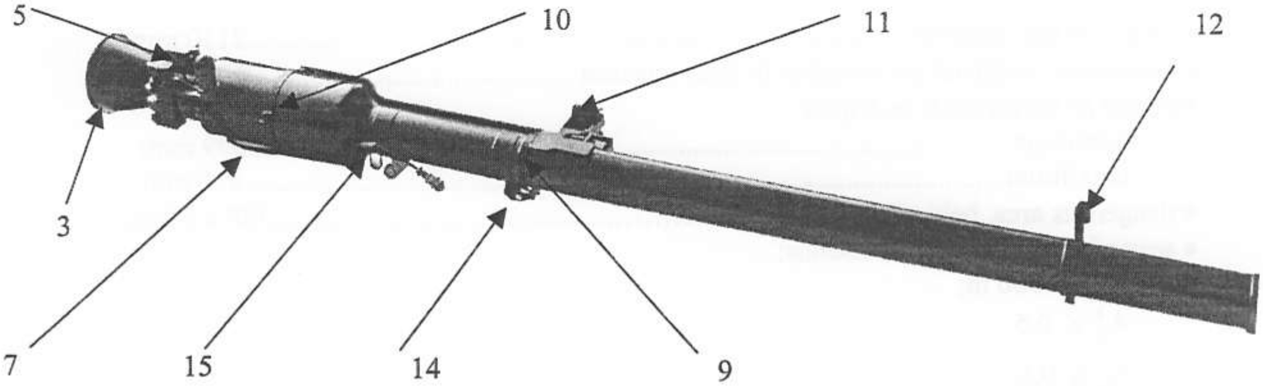
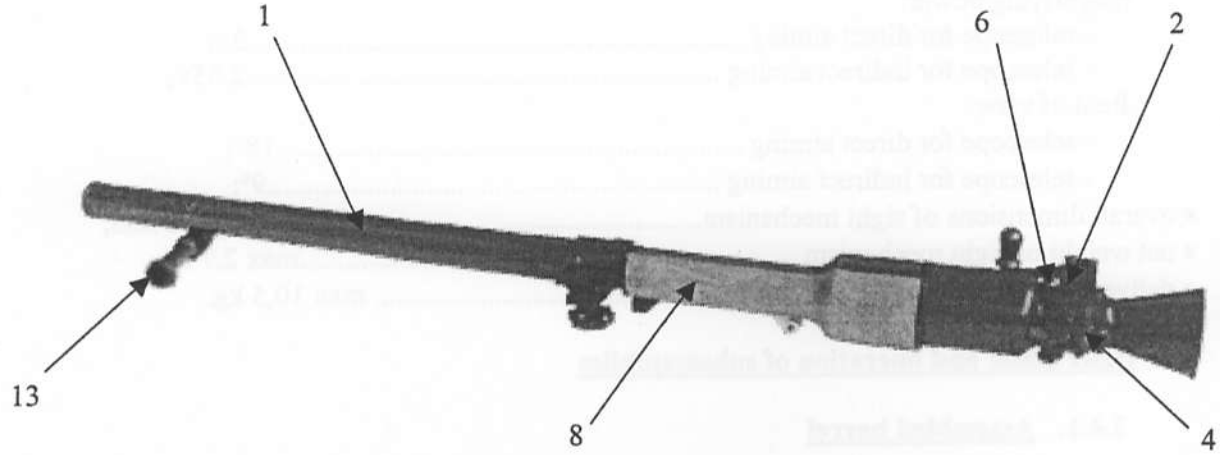


Fig. 2. The barrel (rep 1-1/6G4):
1 – the proper barrel; 2 – the chamber; 3 – breech piece; a – crown for consolidation;
b, v, d, e – lugs; f – facet; g – channel of ring.



Right side



Left side

Fig. 3. Barrel base closing with breechblock:
1 – barrel (part 1-1/6G4); 2 – top lever (part 1-23/6G4); 3 – breechblock (assy. 2/6G4); 4 – bottom lever (part 1-22/6G4); 5 – switching device (assy. 6-13/6G4); 6 – blocking device (assy. 6-16/6G4); 7 – tube (part 6-77/6G4); 8 – guard (assy.1-4/6G4); 9 – front clips (assy. 1-2/6G4); 10 – rear clips (assy. 1-3/6G4); 11 – sight bracket (assy. 4M/M 356); 12 – fore sight (assy. – 1-1/6G4); 13 – handles (assy. 1-5/6G4); 14 – front ear ring (part 1-38/6G4); 15 – rear ear ring (part 1-39/6G4).

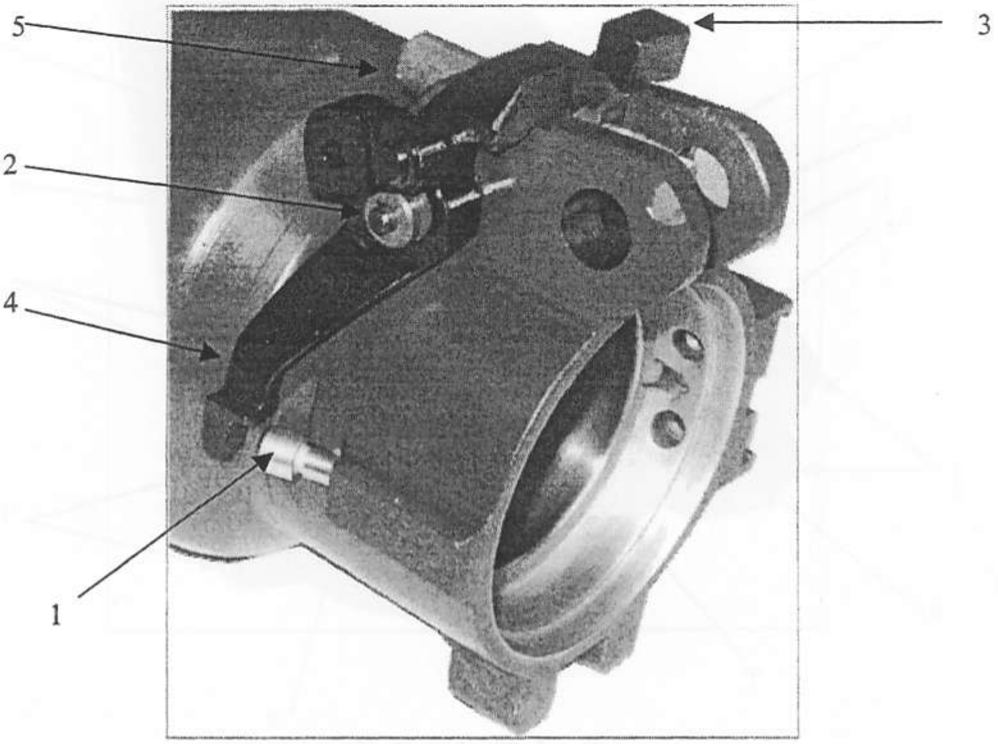


Fig. 4. Breech piece:
1 – pushers (part 1-21/6G4); 2 – levers shaft (assy. 1-9/6G4); 3 – top lever (part 1-23/6G4);
4 – bottom lever (part 1-22/6G4); 5 – catch (assy. 1-11/6G4).

On barrel (fig. 3 and 4) are mounted:

- the breechblock;
- extractor composed of upper levers 2 (fig. 3) and bottom levers 4, that actuate the pushers 1 (fig. 4), serving for extraction of membrane with pipe after firing (or of the round in discharge), the lever are held on the barrel by the shaft 2 (fig. 4);
- switching device 5 (fig. 3) and blocking device 6 of the electrical firing mechanism and the electric cable of tube 7;
- guard 8 with front clips 9 and rear clips 10;
- sight bracket 11;
- fore sight 12;
- handles 13 for launcher transportation.

Barrel is put on tripod, by means of the front 14 and rear 15 ear rings. At the mouth of barrel (fig. 2) there is a crown „a", for consolidation; on this crown are applied scratches for setting the cross to check the sight mechanism.

In the front of barrel there are two lugs: lateral, the lug „b" for fixing the base of front right and the lug „e" for fixing the handle 13 (fig. 3).

In the middle of barrel, there are: upper a facet „f" for gunner quadrant; on the left, two „v" lugs (fig. 2), with "T" channels for fastening the sight bracket 11 (fig. 3); lower – two „d" lugs, with "T" channel, for fastening the front ear rings 14 and the rear ear rings 15 (fig. 3).

In the channel of rings „g" (fig. 2) the front clips of the guard is put, by means of which the guard is ensured against longitudinal and radial travels.

The breech piece (fig. 5) has inside a circular recess „s" , for fastening the round during change; at the back, the circular recess passes to conical recess „T", where, the nozzle of breechblock 1 enters (fig. 6).

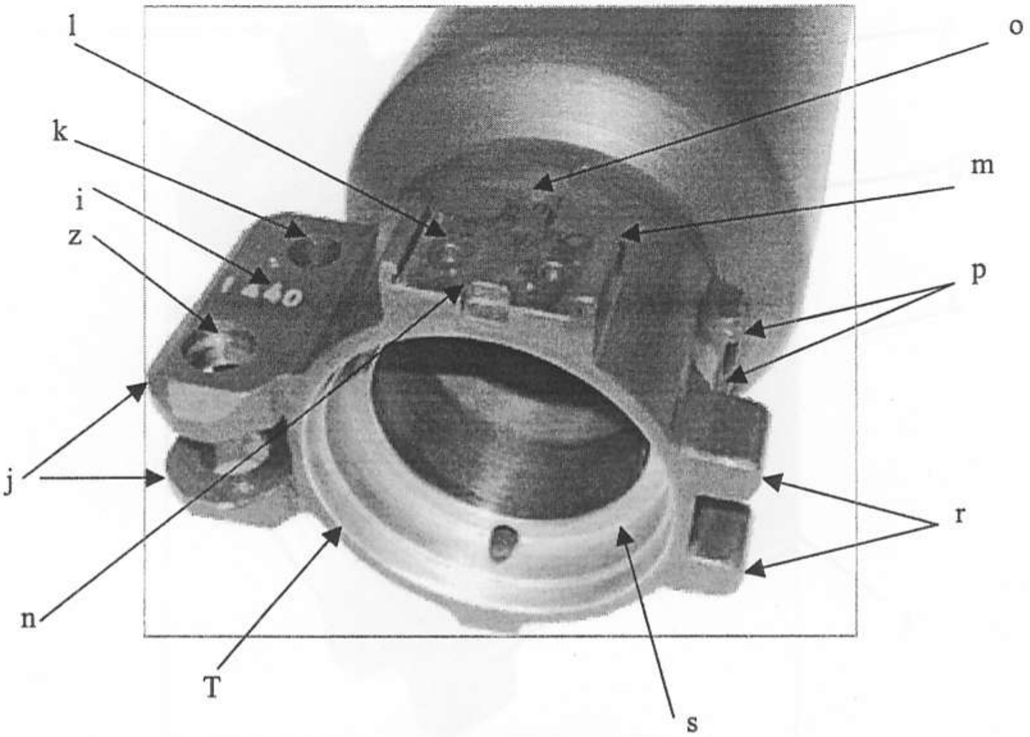
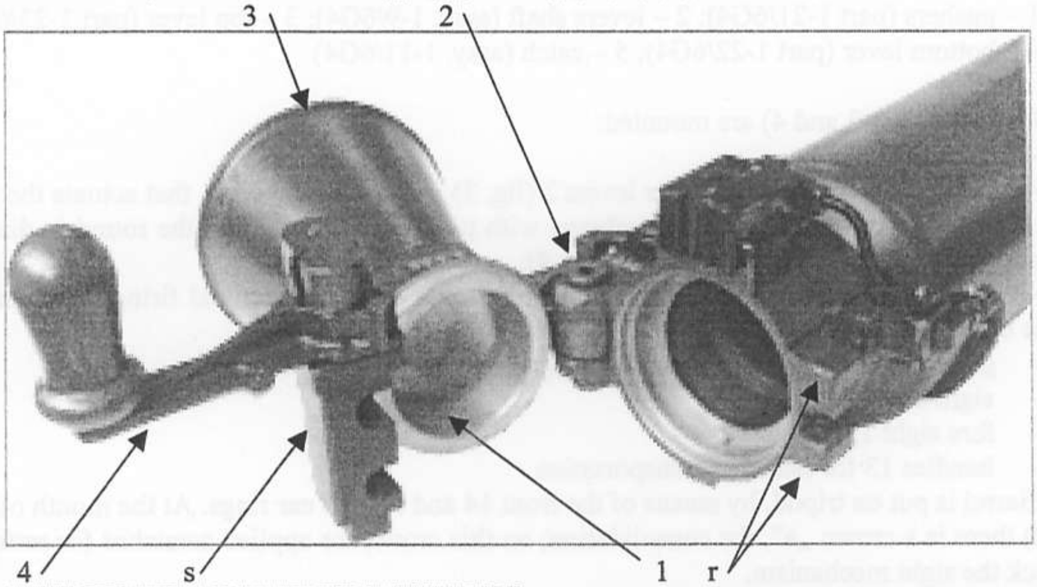


Fig. 5. The breech piece:
s – circular recess; T – conical recess; j, r, p, m – lugs; z, k, i, l, o – holes; n – recess.



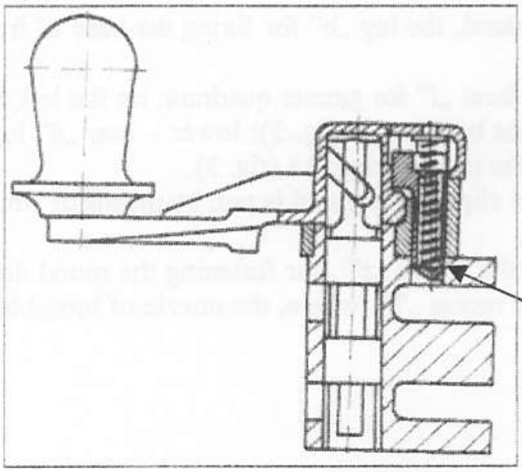


Fig. 6. Barrel base closing with breechblock:
1 – nozzle (part 2-2/6G4); 2 – shaft (assy. 3/6G4); 3 – breechblock (part 2-1/6G4); s, r – lugs; 4 – assembled handle (assy. 2-2/6G4); 5 – catch (part 2-8/6G4).

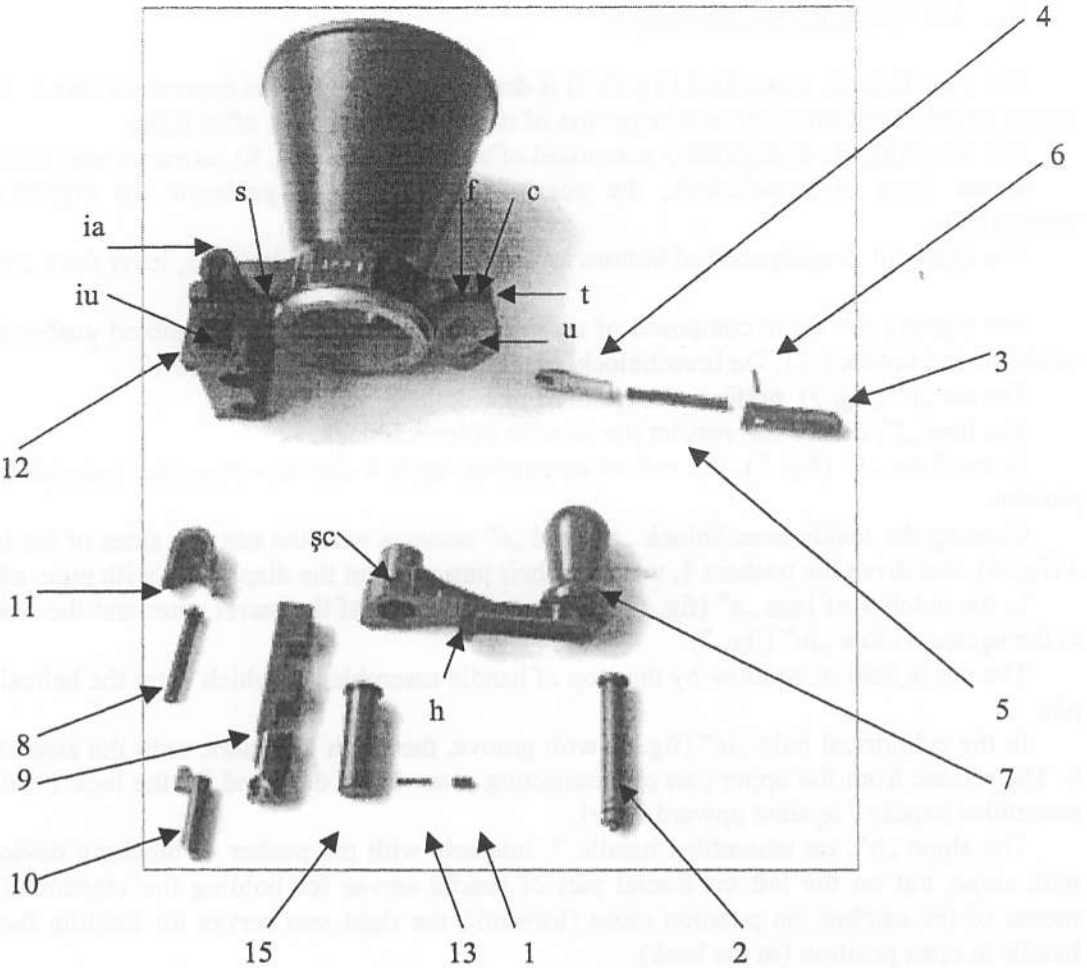


Fig. 7. The breech piece with breechblock

1 – catch (part 3 – 3/6G4); 2 – levers shaft (assy. 1 – 9/6G4); 3 – body of catch (part 1- 17/6G4); 4 – catch assembled (assy. 1-11/6G4); 5 – catch spring (part 1 – 18/6G4); 6 – pin; 7 – assembled handle (assy. 2-2/6G4); 8 – assembled pusher (assy. 2-3/6G4); 9 – wedge (part 2-7/6G4); 10 – catch (part 2-8/6G4); 11 – lock (part 2-9/6G4); 12 – connecting piece (part 2-3/6G4); u – ear; f, s – lugs; t – flute; c – the end; iu – square window; ia – cylindrical hole; h – slope; şc – right seat; 13 – spring (part 3-2/6G4); 14 – pin; 15 – shaft (part3-1/6G4).

On the breech piece (fig. 5), there is the lugs „j", with a seat, where the prominence of breechblock enters. In the lugs „j" there is the hole „z", where enters the shaft 2 (fig. 6), with recess, where the catch 1 of shaft enters (fig. 7). In the hole „k" (fig. 5) the shaft of levers enters 2 (fig. 4). In the cylindrical longitudinal seat of lugs „j" (fig. 5) the body of catch enters 3 (fig. 7) with the catch assembled 4 and catch spring 5. In the holes „i" (fig. 5) of the lugs „j", enters the pin 6 (fig. 7), that fasten the housing of catch.

On the right side of breech piece, there are two lugs „r" (fig. 5) and the lug „p", with dovetail channel, for fastening the blocking device that switch off the electric circuit, if the breechblock is not completely shut.

The release „n" (fig. 5), serves for putting the catch that holds the casing of contacts unit, against longitudinal travel.

The inclined holes „o", disposed up and down serves for mounting the pushers 1 (fig. 4).

In the upper part, there is the lugs „m" (fig. 5) with channel „T", for fastening the contacts casing and two holes „l" for contacts mounting.

2.2.2. The breechblock, assembled

The breechblock, assembled (fig. 6; 7) is designed for closing the channel of barrel, ensuring the feature of recoilless launcher and extraction of membrane with pipe, after firing.

The breechblock, assembled is composed of breechblock 3 (fig. 6), extractor and closing device.

In the front of breechblock, the nozzle 1 is pressed; it performs the critical section of breechblock.

The extractor is composed of bottom levers 4 (fig. 4) and top levers 3, lever shaft 2 and pushers 1.

The chasing device is composed of assembled handle 7 (fig. 7), assembled pusher 8, wedge 9, catch 10 and the lock 11. On breechblock, pins secure the connecting piece 12.

The ear „u" (fig. 7) performs the joint of breechblock with barrel.

The lugs „f", on the ear, restrict the rotation of breechblock.

In the flute „t" (fig. 7), the roll of assembled catch 4 enters, setting the breechblock on open position.

Opening the inside breechblock , the end „c" actuates with the suitable sides of the levers 3 and 4 (fig. 4), that drive the pushers 1, which in their turn pull out the diaphragm with pipe, after firing.

In the notches of lugs „s" (fig. 6), the lugs „r" (fig. 6) of the barrel enter and the wedge 9 is set in the square widow „iu" (fig. 7).

The pin is held in window by the stop of handle assembled 7, which enter the helical channel of pin.

In the cylindrical hole „ia" (fig. 7) with groove, the catch 10 enters, with the assembled pusher 8. The release from the upper part of connecting piece 12, is designed for the lock 11, that hold the assembled handle 7 against upward travel.

The slope „h", on assembled handle 7, interacts with the pusher of blocking device. The seat with slope, put on the left on frontal part of handle serves for holding the assembled handle, by means of the catcher, on position close (forward), the right seat serves for holding the assembled handle in open position (in the back).

In the cylindrical seat of assembled handle there is the upper part of pin.

Operation of mechanisms of breechblock

In order to open the breechblock, rotate the handle 4 (fig. 6) clock wise, and thus, the slope of handle push the catch 5 (fig. 6). The stops of assembled handle interact with the helical channel of breechblock; it is driven down, until the pin release coincides with lugs „r" (fig. 6) on the barrel.

Meanwhile, the assembled handle rotates by 90° to breechblock, up to thresh hold, in same plane with the corresponding face of the connecting piece 12 (fig. 7) and then, it shall rotate the breechblock around its shaft 2 (fig. 6) so that the top of catch 5, falls in the seat „şc" of assembled handle 7 (fig. 7) due to the action of spring.

Rotating the breechblock by 105°, the said „c" pushing the corresponding shoulders of the levers 3 and 4, rotates the levers that in their turn move the pushers 1 (fig. 4).

The angle of rotation of breechblock is 115°.

After stopping the action against the assembled handle (and there for against the breechblock), the breechblock, under the action of the catch 5 (fig. 4) and pushed by spring, rotates in reverse direction at 10°, the top of the catch shall enter in the flute „t" (fig. 7), on breechblock and shall hold on it, in switch on position. The reverse rotation of 10° is necessary for releasing the pusher that shall not hinder the charging.

In order to shut the barrel, rotate the assembled handle counter clockwise completely, in the front limit position. Rotating the handle (together with breechblock), the catch 5 (fig. 6), with its slope shall interact with the face corresponding to the upper threshold of barrel, and rise upward, compressing the spring; the top of catch goes out from the seat „şc" (fig. 7) of handle and it begins to rotate onwards breechblock , rising the wedge and interacting by the slope „h", with the pusher of blocking device.

The catch will slide on spiral slope of the handle compressing more the spring. Rotating the handle completely, the top of catch 5 (fig. 6) enters the seat of handle by the action of spring, and will hold the handle on this position.

The shaft 2 (fig. 6) is designed to join the breechblock with barrel, in the seat of shaft, the safety device and the spring 13 (fig. 7) are mounted.

2.2.3. Electrical firing mechanism

The firing mechanism (fig. 8) is designed for generating and transmitting the electrical pulse from generator to electrical coupling of the round for firing. It is composed of generator unit, blocking mechanism, switching mechanism and wiring barrel.

The generator unit is designed to generate the electrical pulse, to ignite the propelling charge.

The generator set is composed of a body and cover 5, in which are mounted the inductor, assembled handle 6, the shock absorber 7, safety 8, the electrical coupling 9 and the spring 10 (fig. 8).

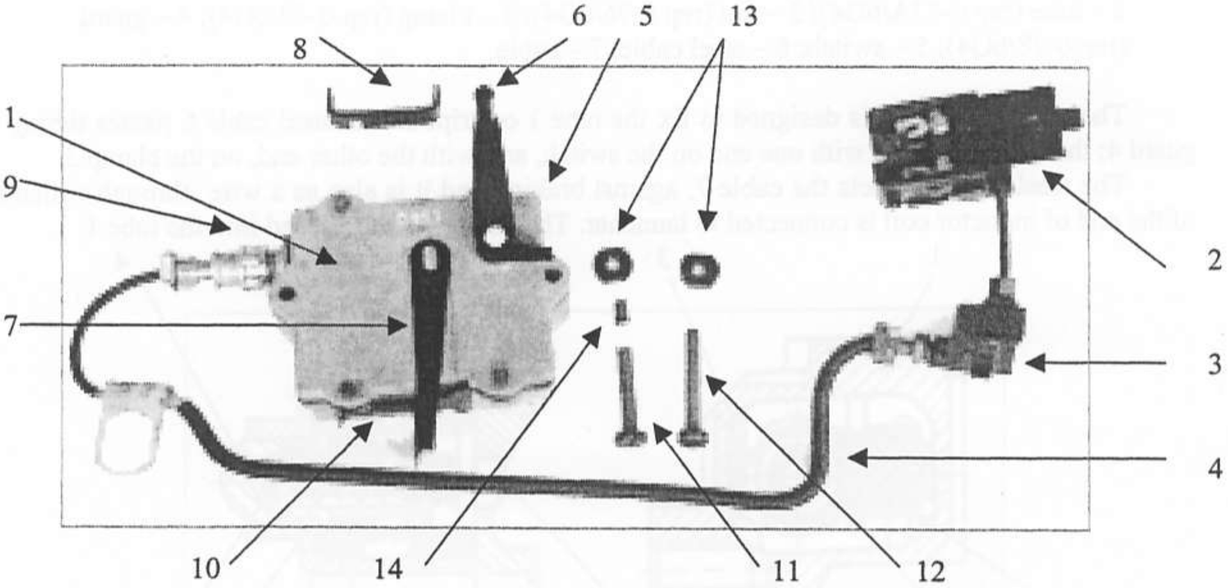


Fig. 8. Electric firing mechanism (assy. 6/6G4):
1 – generator unit (assy. 6-7A/6G4); 2 – switching mechanism (assy. 6-13/6G4);
3 – blocking mechanism (assy. 6-16/6G4); 4 – wiring barrel (assy. 6-18/6G4); 5 – body and cover; 6 – assembled handle (assy. 6-6/6G4); 7 – shock absorber (rep 6-17A/6G4); 8 – safety (part 6-33/6G4); 9 – electrical coupling; 10 – spring (part 6-31/6G4); 11 – screw (part 6-35/6G4); 12 – screw (part 6-36/6G4); 13 – nut (part 6-37/6G4); 14 – shock absorber (part 6-34/6G4).

The current generator is put on a tripod under barrel, by means of the screws 11 and 12 and the nuts 13 (fig. 8). For attenuating the hit of assembled handle, when fire, on the screw 11 is put the shock absorber 14.

The tube 1 (fig. 9) is designed to protect against deterioration of the cable going from the generator set to the blocking device.

The tube has the nut 2 (fig. 9), the clamp 3, the guard 4, switch 5. The nut is screwed in the lateral lug boss of body 1, of the blocking device (fig. 10).

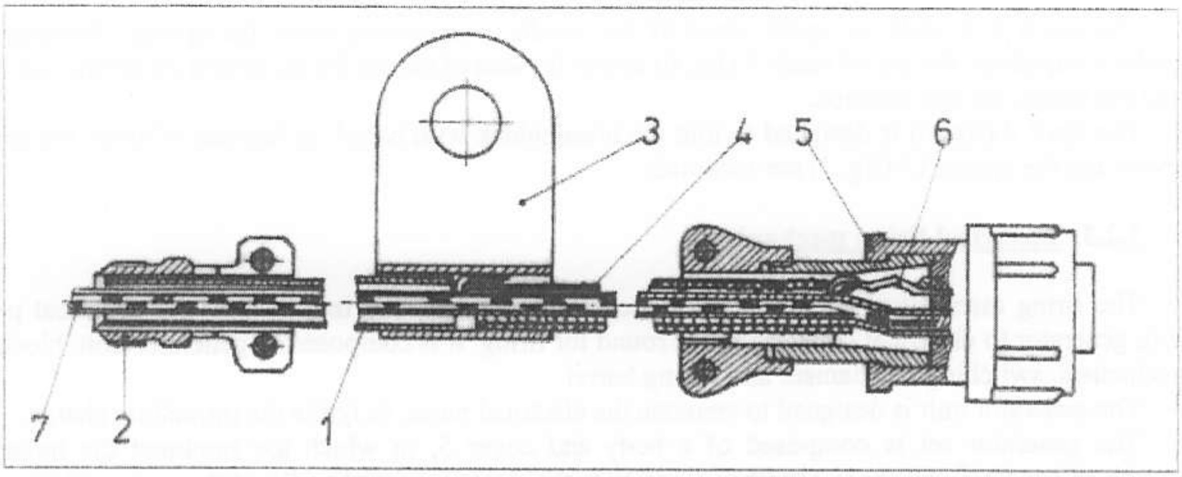


Fig. 9. Wiring barrel (assy. 6-18/6G4):
1 – tube (rep 6-77A/6G4); 2 – nut (rep 6-76/6G4); 3 – clamp (rep 6-79/6G4); 4 – guard (rep 6-78/6G4); 5 – switch; 6 – steel cable; 7 – cable.

The clamp 3 (fig. 9) is designed to fix the tube 1 on tripod. The steel cable 6 passes throng the guard 4; the cable is tinned with one end on the switch, and with the other end, on the clamp 3.

The steel cable protects the cable 7, against braking and it is also as a wire through which one of the end of inductor coil is connected to launcher. The cable 7 is introduced into the tube 1.

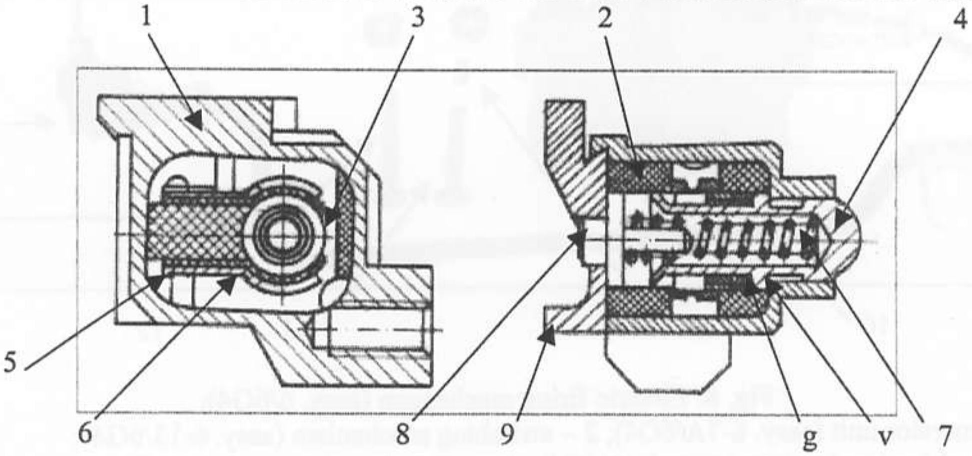


Fig. 10. The blocking device (assy. 6-16/6G4):
1- body (rep 6-73/6G4); 2 – insulator (assy. 6-15/6G4); 3 – small plates (rep 6-69/6G4); 4 – pusher (assy. 6-14/6G4); 5 – limiters (rep 6-70/6G4); 6 – lamellas (rep 6-71/6G4); g – contact bush; 7 – spring (rep 1-4/6G4); v – collar; 8 – catch (rep 6-74/6G4); 9 – cap (rep 6-75/6G4).

The blocking device (fig. 10) does not allow firing, if the breechblock is not completely closed. The blocking device is composed of body 1 in which the insulator 2 is introduced. On insulator, there are two small plates 3, which cover the pusher 4. The contact small plates are assembled with limiters 5 and lamellas 6, through the holes from the insulator of contact small plates; the limiters and lamellas are fixed with rivets.

On one of the lamellas is the tinned cable, that is pulled by the upper lug boss of contacts body. The tinned cable on the other lamella is drawn through the lateral lug boss to generator.

The pusher 4 breaks off the electrical circuit if the breechblock is not completely closed. It is composed of a cylindrical housing, where there are the insulators, the contact bush „g", the insulating bush and the washer.

The housing is flanged again on the side of washer and it has a circular recess for friction diminution, and on the shaft it has a blind hole, in which is introduced the spring 7.

The pusher is introduced into the body of blocking device, through the holes of insulator 2. The movement of pusher is limited in one side by the collar „v", and in the other side, by the catch 8 and the cap 9.

The cap 9 has a hole for mounting the catch 8, which fasten the cap on close position. The blocking device is fastening on the barrel, by means of a dovetail guide.

The contact device: (fig. 11 and 12) is designed to transmit the electrical pulse to the propelling charge. The device is composed of a body 1, the right lever 2 and left lever 3, the catch 1, the cap 2, catch 3, the pusher 4 (fig. 12), assembled shaft 5, two springs 6, insulators 7, the right spring 8 and the left spring 9.

The levers are mounted on the shaft 5, through the wall holes and the housing stay, are secured to lateral lugs boss of the barrel that protect the shaft against fall.

The levers are designed to transmit the electrical pulse from the current generator unit, by the blocking device for contacts. The lamellas are riveted on levers, on which the ends of conducting wires are tinned.

The point of connection of the wires is shut in the vinyl chloride tube 4 (fig. 11). The lever is detached from the shaft 5 (fig. 12) by the bush 5 (fig. 11).

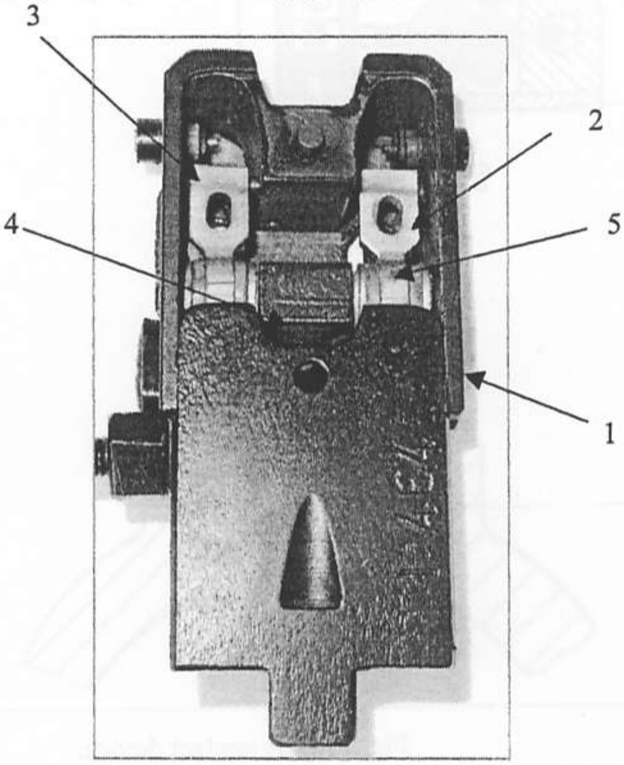


Fig. 11. The contact device (assy. 6-13/6G4):
1 – body (rep 6-50/6G4); 2 – right lever 2 (assy. 6-8/6G4); 3 – left lever (assy. 6-9/6G4);
4 – vinyl chloride tube; 5 – bush (rep 6-40/6G4).

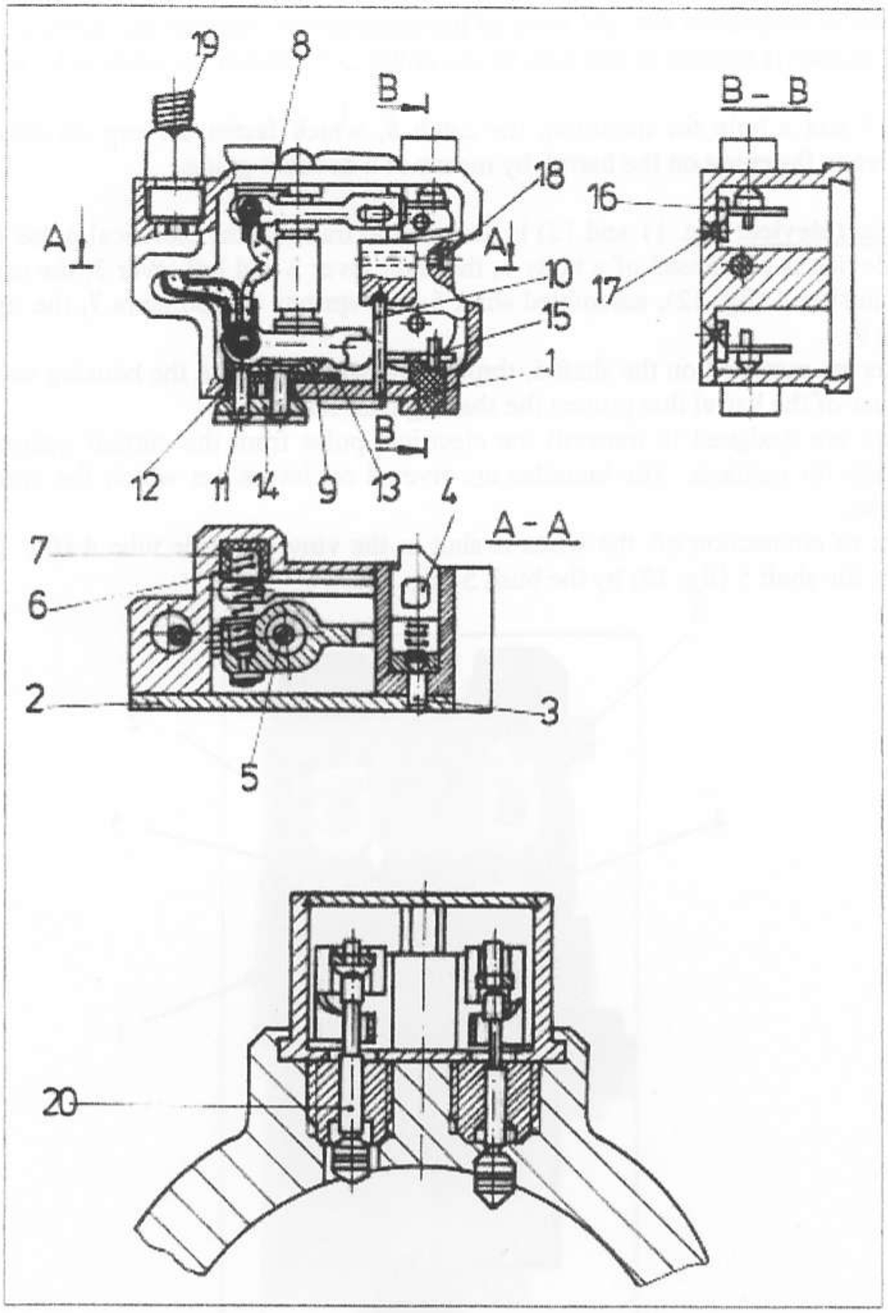


Fig. 12. The contact device:
1 – catch (assy. 6-10/6G4); 2 – cap (rep 6-49/6G4); 3 – catch (rep 6-55/6G4); 4 – pusher (rep 6-53/6G4); 5 – assembled shaft (assy. 6-12/6G4); 6 – springs (rep 1-4/6G4);
7 – insulator (rep 6-52/6G4); 8 – right spring (rep 6-60/6G4); 9 – left spring (rep 6-59/6G4); 10 – pins; 11 – rivets; 12 – insulating bush (rep 6-56/6G4); 13 – insulating gaskets (rep 6-57/6G4); 14 – small plates (rep 6-58/6G4); 15 – limiter (rep 6-44/6G4); 16 – limiting washers (rep 6-51/6G4); 17 – rivets; 18 – pin; 19 – guard (rep 6-46/6G4); 20 – contacts (assy. 5/6G4).

For setting the bush, a washer is used and rebordering of shaft 5 (fig. 12).

The levers have places, where the springs 6 are introduced, set in the bottom of insulators, 7 (fig. 12).

The insulators are mounted in the holes of body. In the body, two pins are mounted 10, which are designed for limitation of levers movement around the shaft and prevention of fire, if one contact is not set. In this situation, the electrical circuit makes contact with the launcher by means of the pins 10.

For keeping the contacts against fall on the walls of body, in the inner part with the rivets 11 (through the insulating bush 12, insulating gaskets 13 and small plates 14) are set the right springs 8 and right springs 9. In the lugs boss of body, the catches 1 and limiters 15 are mounted. The limiters pass through the oblong holes in the springs 8 and 9 and serves for limitation of movement of the catches.

The limiting washers 16 mounted in the body, through the rivets 17, limit the movement of the right and left spring, vertically.

The cap 2 that is fastening by the catch 3 closes the body. The catch is equipped with a spring, put into the housing. At the same time, the spring of catch pushes also the assembled pusher; the pin 18 prevents its fall.

The body is joined with barrel by the „T" guides, and is fasten by the pusher 4.

The guard 19 protects against deterioration, the wire going from the blocking device to the contact device. For preventing the breaking of wire, a tinned steel cable is passed trough the guard, in the slots of the guard nuts.

The guard is screwed with an end in the upper lug boss of the body of blocking device, and with the other, end in the lug boss of body of contact device.

The contacts 20 serves for supplying with current from the electrical firing mechanism to the contact ring, put on the diaphragm of propelling charge.

OPERATION OF GENERATOR (of trigger mechanism)

Before firing, (before charge with round) the assembled handle 6 (fig. 8) is brought back completely and is secured by the safety lock 8, being at the button of generator unit. After loading, shall fire, by operating the safety pin and then the valve 7.

OPERATION OF THE BLOCKING DEVICE (fig. 10)

When closing the launcher, (the breechblock), assembled handle 4 (fig. 6), before coming up to the front limit position with 2° – 3°, starts to move the pusher 4 (fig. 10), with his slope „h", to the extreme lower position, in which it shuts the electrical circuit, generator – contacts. The contact bush „g" of pusher approaches the contact small plates 3.

When open the breechblock, the slope „h" (fig. 6) of assembled handle 4, gets out of contact with pusher. Operated by the spring 7 (fig. 10), the pusher moves up wards, until it clashes with the collar „v", on the wall of body.

Thus, the contact bush „g", stops to reach the contact plates 3. The electrical circuit, generator – contacts is interrupted.

OPERATION OF SWITCHING MECHANISM (fig. 12)

In the unloaded launcher, the contacts are pusher down, by means of the spring 6 and levers.

In loading, the contacts are pushed upwards, by the contact ring of propelling charge and the contact springs of diaphragm lean against the breech piece, thus providing for the electrical circuit for launcher and round, if the breechblock is completely shut.

The basic circuit diagram of the electrical firing mechanism of launcher is shown in figure 13:

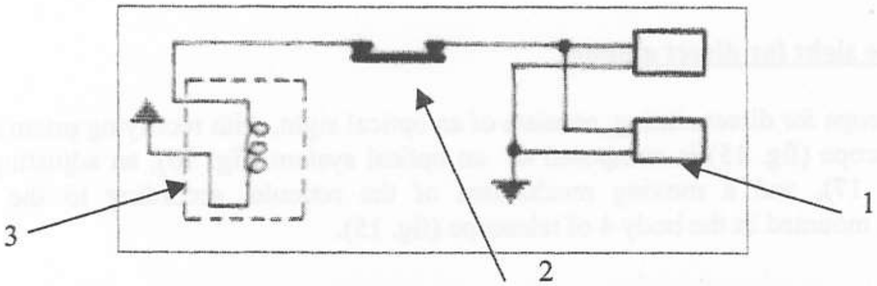


Fig. 13. The basic circuit diagram of the electrical firing mechanism:

- 1 pyrotechnic igniter;
- 2 blocking switch;
- 3 electrical mechanism.

2.2.4. Sight mechanisms

The sight mechanisms are designed for launcher orientation towards target and provide firing up to a range of 4500 m, on fixed and moving targets.

The sight mechanisms are composed of the optical sight and rear sight.

THE OPTICAL (AIMING) MECHANISM AOAG – 9M

The AOAG – 9M sight (fig. 14) is designed to direct the barrel of launcher towards target, horizontally and vertically, in conditions of fire with direct and indirect aiming.

The sight AOAG – 9M combines two telescopes:

- telescope for direct aiming;
- telescope for indirect aiming.

The two telescopes are mounted so that the aiming line of the telescope for direct aiming shall not deviate during operation with the telescope for indirect fire.

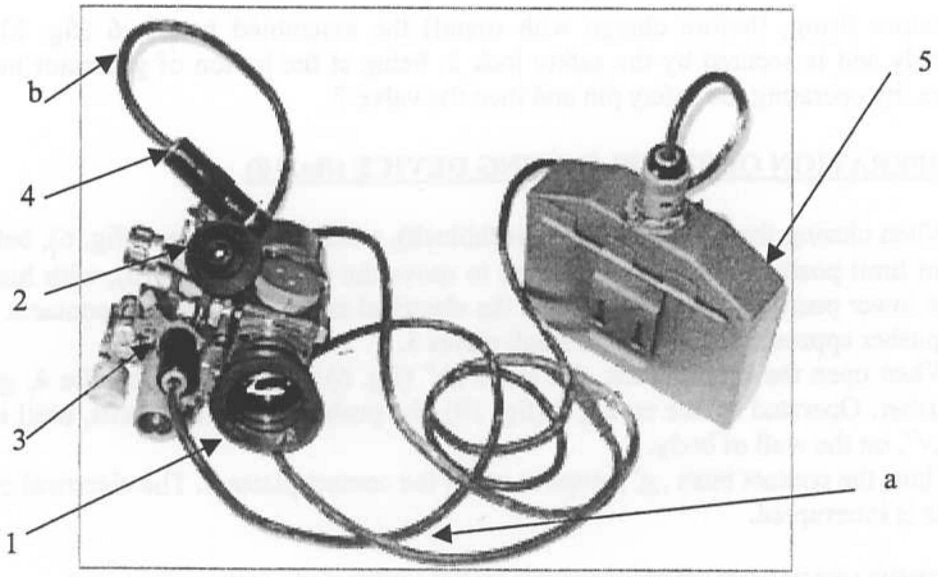


Fig. 14. The optical (aiming) mechanism AOAG – 9M:
1 – telescope for direct aiming; 2 – telescope for indirect aiming; 3 – illuminating unit for reticule; 4 – illuminating unit for indirect telescope; a,b – ramifications of electrical cable; 5 – battery.

Telescope sight for direct aiming

The telescope for direct aiming, consists of an optical sight, with rectifying prism system.

The telescope (fig. 15) is composed of an optical system (fig. 16), an adjusting mechanism of objective (fig. 17), and a moving mechanism of the reticule, according to the temperature of environment 5, mounted in the body 4 of telescope (fig. 15).

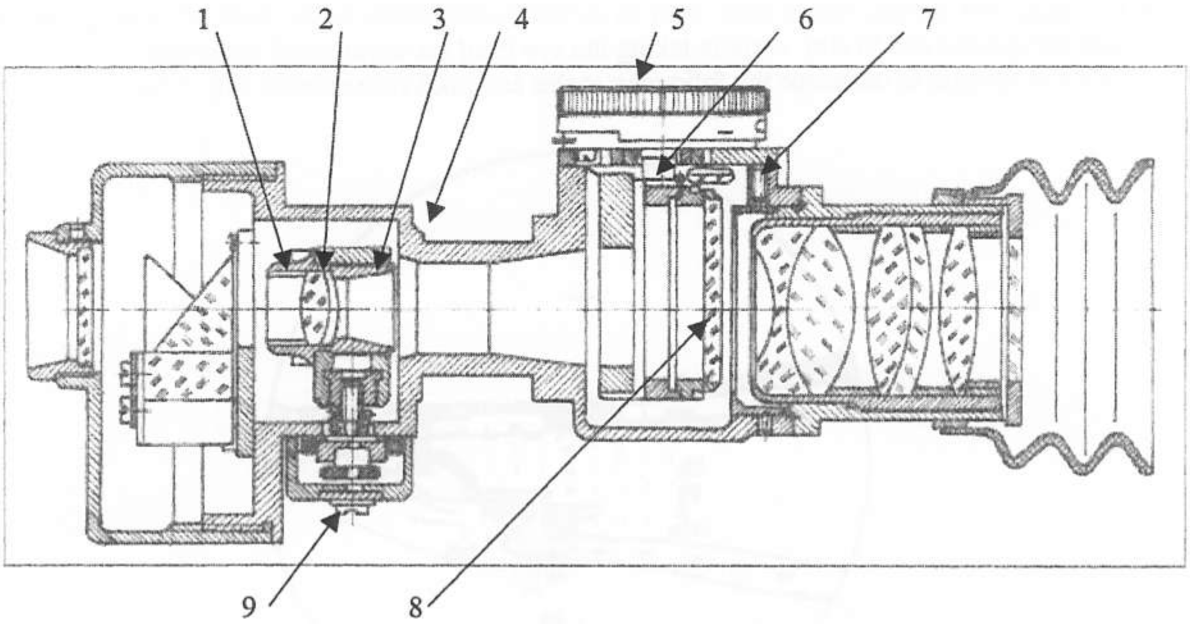


Fig. 15. Telescope sight for direct fire:
1 – small plates; 2 – objective; 3 – slide; 4 – body; 5 – scale of temperature correction;
6 – screw; 7 – blocking pin; 8 – reticule; 9 – adjusting mechanism.

The optical system of telescope for direct aiming (fig. 16) is composed of a protection glass 1; rectifying prism body 2; objective doublet 3; reticule 4; eyepiece 5, composed of 5 lens and light filter 6.

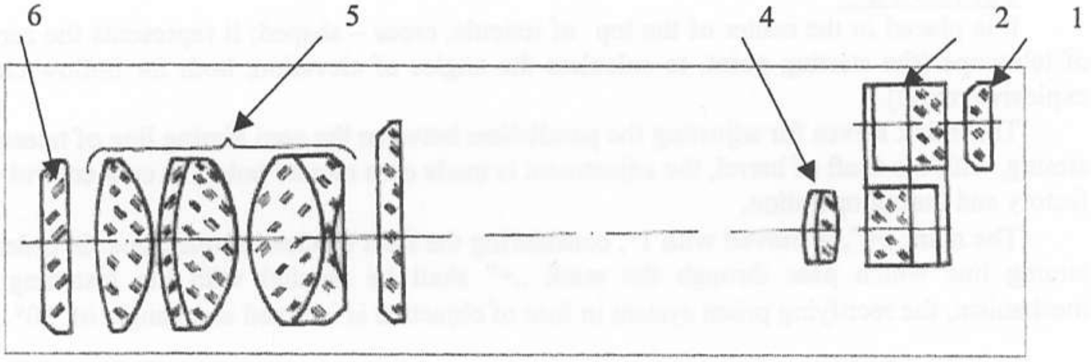


Fig. 16. Optical system of the telescope for direct aiming:
1 – protection glass; 2 – prism body; 3 – objective doublet; 4 – reticule; 5 – eyepiece;
6 – light filter.

The reticule of aiming telescope for direct aiming is placed in the focal plane of eyepiece, so that the range and aiming marks scale shall be included completely in the field of view; gunner is able to watch the ground and to aim, without taking the eye from the eyepiece of telescope.

On the reticule of telescope the following scales and marks are marked (fig. 17.a.).

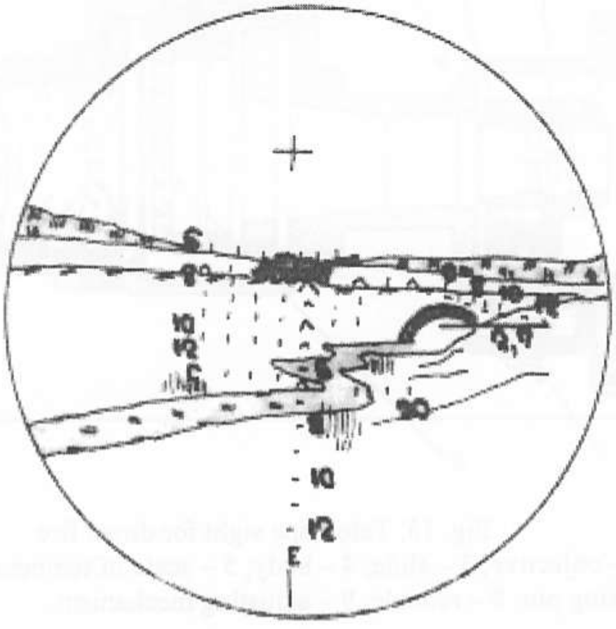


Fig. 17.a. The reticule telescope for direct aiming.

The mark „+"

It is placed in the center of the top of reticule, cross – shaped; it represents the zero aiming line of telescope (the starting point, to calculate the angles of elevation, both for hollow charge, and for explosive round).

This mark serves for adjusting the parallelism between the zero aiming line of telescope for direct aiming, with the shaft of barrel, the adjustment is made on a remote point, or on a control panel, both in factory and during operation.

The mark „+", is moved with 1°, considering the field of view of telescope. In order that the zero aiming line which pass through the mark „+" shall be parallel with the fastening rod of sight mechanism, the rectifying prism system in font of objective is inclined at an angle of 30°.

Scale of elevation angles and the cross – leveling scale for firing with hollow charge.

The marks of elevation angle scale for the hollow round (letter „c" marked on the left of reticule) (fig. 17.a.) are applied in the shape of thorn and vertical lines, marked by the numbers 6, 8, 10, 12, according to the distances from 600, 800, 1000, 1200 m up to the target. The angles of elevation – without taking into consideration the cross - levels – are marked in the center, in the shape of thorns (except the angle of elevation, equivalent to the distance of 600 m), the thorns have a 60° opening, excepting the thorn for the distance of 800 m, having an opening of 90° and bigger sides.

The marks of cross leveling scale are applied in the shape of vertical lines on the right and left of the central aiming marks, in the range of 0 – 05, having marked only the figures 10 and 20 (on the right down), corresponding to a range of 0 – 10 and respectively 0 – 20, considering the central thorns.

The cross leveling (lateral corrections) scale allows to introduce the corrections for firing against moving targets.

Scale of elevation angles for direct firing with explosive round

The marks of the scale for angles of elevation for the explosive round (the letter „E", marked on reticule, dawn), are applied in the shape of horizontal lines (to distinguish then from the marks of angles of elevation for the hollow round) and placed in the center, vertically.

The first mark of this scale is placed directly under the thorn that represents the angle of elevation for the distance of 900 m, on the scale „c", and it represents the angle of elevation for the distance up to the target of 200 m.

The scale goes on down, by marking the angles of elevation, corresponding to the distances 400, 600, 700, 800, 900, 1000, 1100, 1200 and 1300 m. The angles of elevation for the distances of 600, 800, 1000 and 1200 m are marked with the figures 6, 8, 10 and 12 respectively.

The range scale, up to the target (fig. 17.b.)

To determine the distances up to the target.

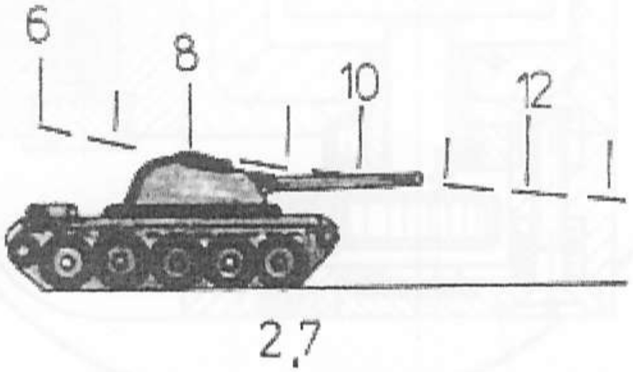


Fig. 17.b.

The scale is composed of two lines:

- a lower line – horizontal and continuous;
- an upper line – curved and interrupted.

Under the continuous horizontal line, there is the marked number 2,7, representing the height of target, whose scale is calculated.

Above the upper interrupted line, vertical lines are placed, marking the distances up to the target. The lines are marked be the numbers 6, 8, 10 and 12, corresponding to the distances 600, 800, 1000 and 1200 m.

In order to determine the distance (fig. 17.b.), it is necessary that the image of target (the tank) shall be put between the interrupted curve and horizontal line, so that the target outline should be tangent to the two lines of scale.

In this position, the tangent point of the interrupted curve line with the tank outline shows the distance up to the target.

The vertical line, under the letter „E" (fig. 17.a.), placed in the center, allows the gunner to find out easier, the cross leveling of the launcher, at the same time serving for vertical placing of reticule of telescope for direct aiming when the adjustment of zero aiming line in panel, is performed.

Adjusting mechanism of the aiming telescope for direct fire

The adjusting mechanism 9 (fig. 15), has a slide 3, where the objective 2 is placed. The slide can move vertically and horizontally, between the small plates 1, by rotating the vertical adjusting screw 6 and the horizontal adjusting screw 2 (fig. 18). These screws have a knurled surface, where the catch 4 enters, actuated by springs 5, the catch is designed to prevent self – detachment of the (screws) adjusting screws. The caps 3 and 7 protect the adjusting screws. The slide is pushed towards the ends of adjusting screws by the spring 1.

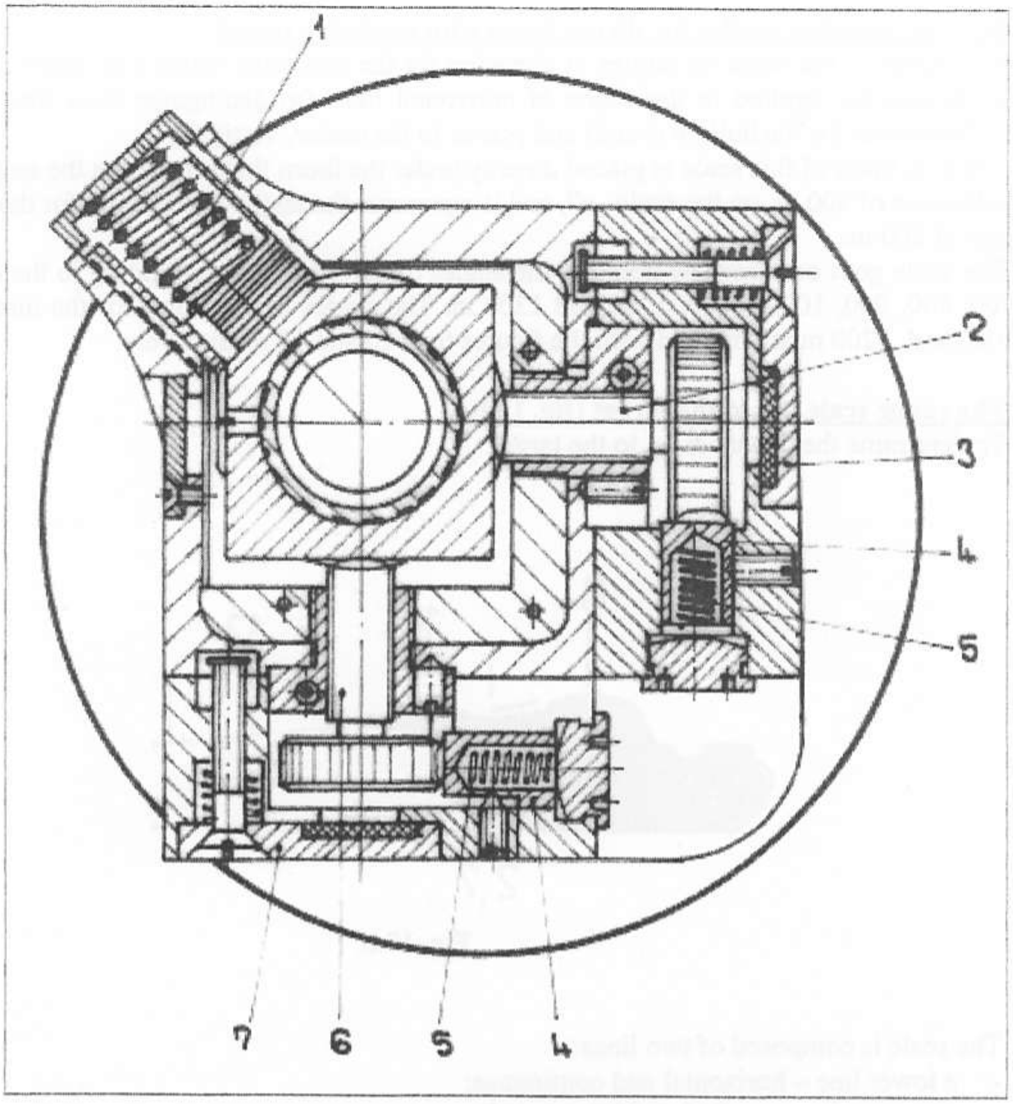


Fig. 18. The adjusting mechanism of objective:
1 – spring; 2 – horizontal adjusting screw; 3 – cap; 4 – catch; 5 – spring; 6 – vertical adjusting screw; 7 – cap.

Reticule moving mechanism, according to the environment temperature

The moving mechanism of reticule (fig. 19) is composed of a support plate 1, the slide 2, on which is put the reticule in cover 3, the screw 4, the coupling nut 5, the temperature corrections scale 6, operating knob 7.

The movement of slide 2 on supporting plate 1 is performed on two guides, by rotating the operating knob 7. By its rotation, it actuates the coupling nut, being interlocked with it. The nut cannot move in axial direction and thus it actuates against the screw 4, screwing, or unscrewing it, into itself. The screw, by moving actuates the slide 2, where the reticule is put on.

The springs 8 react on the slide; the springs are designed to take over the play, in the assembly between the screw 4 and the coupling nut 5.

The rotation stroke of the knob and the movement of slide 2 are limited by the pin 9.

The positions for temperature corrections „+" , „0" , „–" , are set by means of an indexing system – with spring ball 10. Indexing is performed by the ball, that penetrate under the action of spring, in one of the 3 channels which equip the scale 6, corresponding to the corrections „+" , „0" and „–".

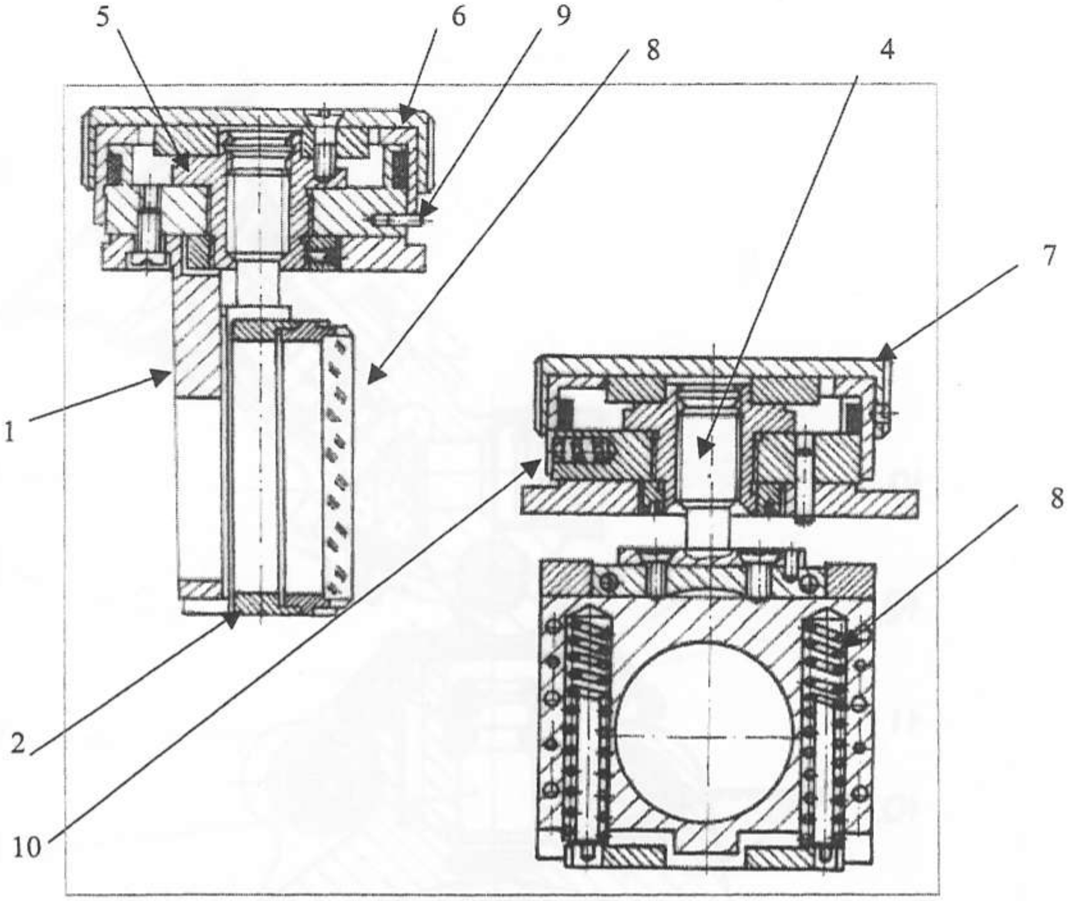


Fig. 19. Reticule moving mechanism, according to the environment temperature:
1 – support plate; 2 – slide; 3 – reticule in cover; 4 – screw; 5 – coupling nut; 6 – temperature corrections scale; 7 – operating knob; 8 – spring; 9 – pin; 10 – indexing system – with spring ball.

The telescope for indirect aiming

The telescope for indirect aiming (fig. 20) consists of a bent optical sight and drift mechanism of angle of elevation and angles of position (longitudinal – level mechanism).

The optical system of telescope for indirect aiming is mounted in the body 1. The body consists of an objective 1, made up of a doublet, a roof prism 4, reticule 3 and an eyepiece 2, made up of two doublets (fig. 21).

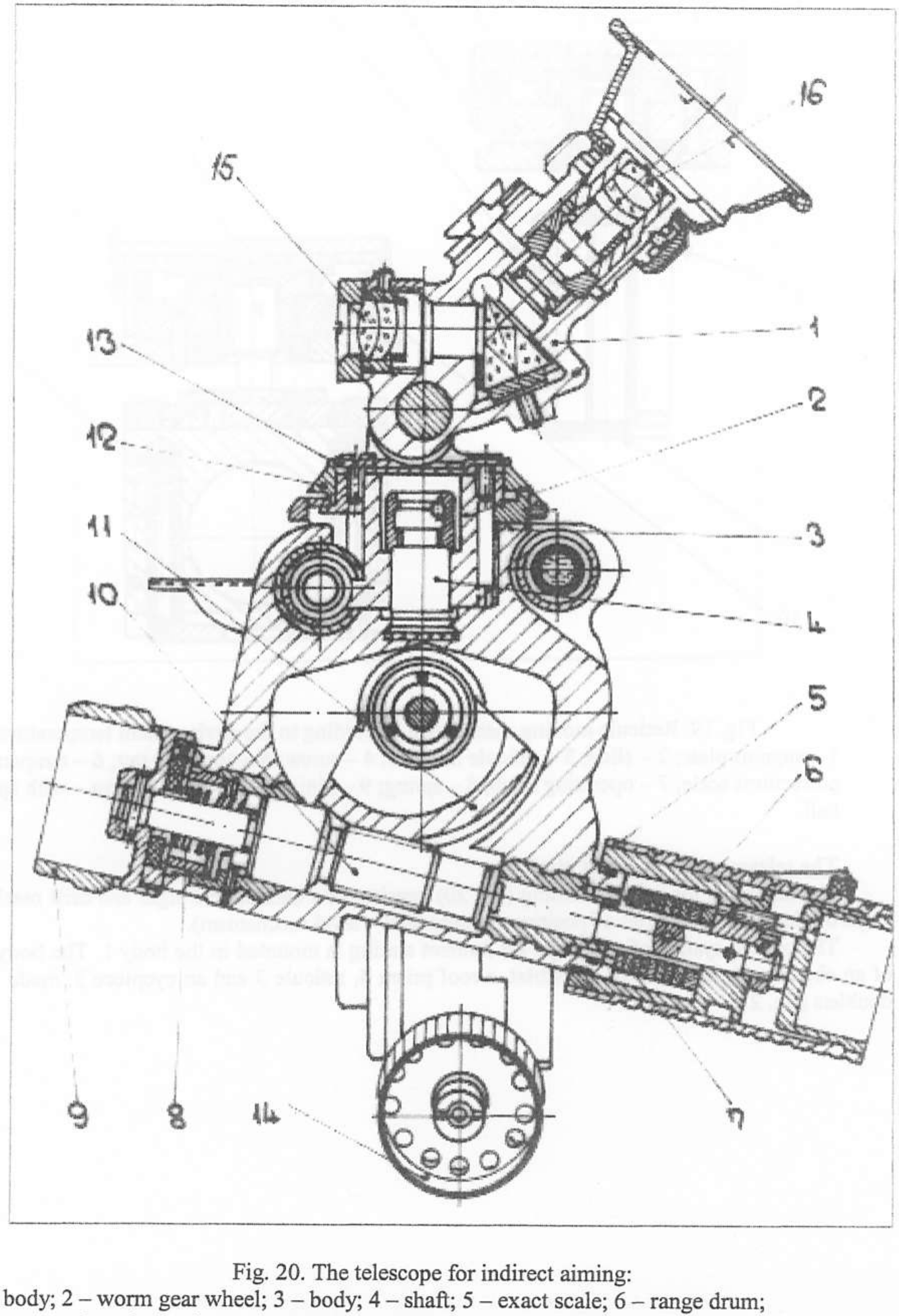


Fig. 20. The telescope for indirect aiming:
1 – body; 2 – worm gear wheel; 3 – body; 4 – shaft; 5 – exact scale; 6 – range drum;
7 – stop washer; 8 – spring; 9 – drum; 10 – worm; 11 – worm sector; 12 – scale;
13 – fastening plate; 14 – operating knob.

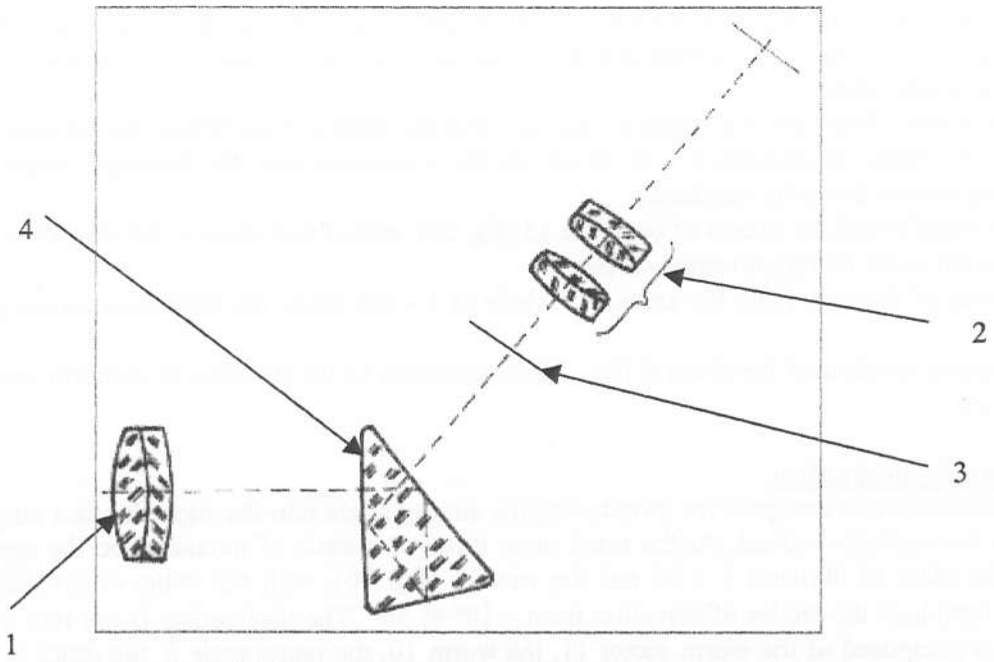


Fig. 21. The optical diagram of the telescope for indirect aiming:
1 – objective; 2 – eyepiece; 3 – reticule; 4 – prism.

In the field of view of the sight for successive aiming, there is the reticule with a cross, by means of which it is performed the aiming on the aiming point.

On the left, the body of sight is equipped with a fore sight – sighting notch system for approximate aiming.

The drifts mechanism

The drifts mechanism is designed to determine the angles in horizontal plane. It is put on the body 3 (fig. 20). The drifts mechanism has a worm wheel 2, which rotates on the shaft 4 and a worm 3 (fig. 22), turning into the eccentric 2, being operated by the lever 1.

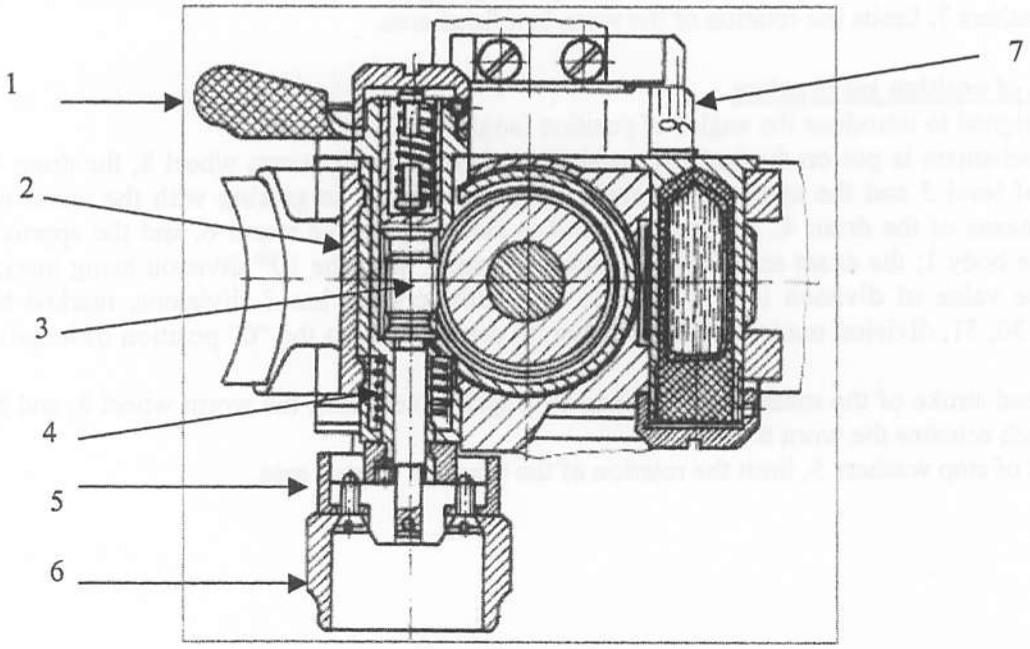


Fig. 22. The drifts mechanism:
1 – lever; 2 – eccentric; 3 – worm; 4 – spring; 5 – exact scale; 6 – drum; 7 – approximate scale of angles of elevation.

When the lever 1 of eccentric rotates, the worm goes out of action with the worm wheel. The eccentric, together with the lever 1 returns to the initial position, being operated by spring 4, the worm binds with the worm wheel.

On the worm, there are the drum 6 (fig. 22) and the spring 5 on which the azimuth scale is written, with the value of division 0 – 01. In all, on the scale there are 100 divisions, every the tenth division being written down by numbers.

On the worn wheel, by means of the plate 13 (fig. 20), and of two screws, the ring 12 is fastening with the azimuth scale, having 60 equal divisions.

The value of division from the azimuth scale is of 1 – 00, every the fifth division being marked by numbers.

A complete rotation of the drum 6 (fig. 22) corresponds to the division of azimuth scale, on the ring 12 (fig. 20).

Sight angle mechanism

This mechanism is designed for introducing the aiming angle into the sight. It has a range scale 6 (fig. 20) for the explosive round. At the same time, it has two scale of thousandths: the approximate one, with the value of division 1 – 00 and the exact 5 (fig. 20), with the value of division 0 – 01, allowing to introduce the angles of elevation from – 10° to 50°. The mechanism is put into the body 3 (fig. 20). It is composed of the worm sector 11, the worm 10, the range scale 6, the drum 9, the exact scale 5 and the approximate scale 7 (fig. 22). The worm sector 11, is put on the shaft of body of horizontal adjustment mechanism and is found in the gearing with the worm 10, which can rotate by means of the drum 9. The exact scale 5 and the range scale 6, are put on the worm 10, the approximate scale being engraved on the body 3. On the range scale of the sight there are marked small and big lines, the distance between two successive divisions corresponding to the change of the range of fire with 50 m. The big lines are marked with numbers, showing the hectometers. For example No. 31 corresponds to the distance of 3100 m, No. 35 – the distance of 3500 m, etc.

The exact scale 5 (fig. 20) has 100 divisions, every the tenth division being coded. The approximate scale has 9 equal divisions each the second division from „0" to „8" being marked with numbers (0, 2, 4, 6, 8).

A complete rotation of the exact scale corresponds to a division from the approximate scale.

The dead stroke of the mechanism is taken by the spring 8, witch actuates the worm sector. The set of stop washers 7, limits the rotation of the worn in a fixed area.

Angles of position mechanism

It is designed to introduce the angles of position (angles of site) (fig. 23).

The mechanism is put on the body 1, consisting of the worm 6, worm wheel 8, the drum 4, the exact scale of level 3 and the approximate scale 2. The worm 6 is in gearing with the worm wheel, rotating by means of the drum 4. The exact scale 3 is fastening on the worm 6, and the approximate scale 2 on the body 1; the exact scale has 100 equal divisions, each the 10th division being marked by numbers. The value of division is 0 – 01. The approximate scale has 3 divisions, marked by the numbers 29, 30, 31, division marked by the number 30 corresponds to the "0" position of longitudinal level.

The dead stroke of the mechanism is taken by a spring, actuating the worm wheel 8, and by the spring 7, which actuates the worn 6.

The set of stop washers 5, limit the rotation of the worm in a fixed area.

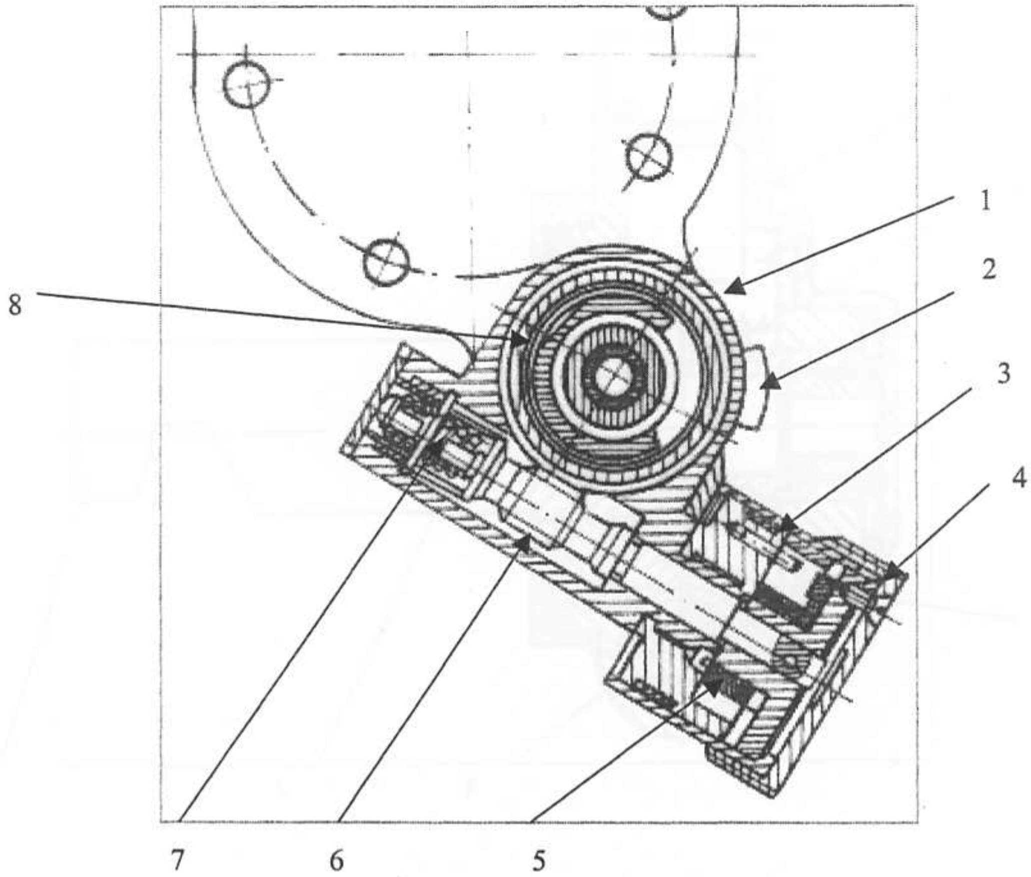


Fig. 23. Angles of position mechanism:
1 – body; 2 – scale of angles; 3 – the exact scale; 4 – operating knob; 5 – stop washer; 6 – worn; 7 – spring; 8 – worm wheel.

The mechanism of the transversal swinging

The mechanism of the transversal swinging (fig. 24) is designed for calculating the cross – leveling of the assembly launcher – sight and for horizontal adjustment of the sight.

The mechanism is put into the body 1. The fastening rod 3 of the sight in the holder of launcher is equipped with a worm sector and it is in gear with the worm 4, which rotates by means of the operating knob 14 (fig. 20). The dead stroke of the mechanism is taken by means of the spring 6.

On the body 1, there are the telescope for direct aiming and the telescope for indirect aiming. By rotating the operating knob 14 (fig. 20), the body 1 together with the two telescopes turn around the shaft of the rod 3 which is hard put in the holder of launcher, and thus, by means of the cross level placed on the body of elevation angle mechanism of the telescope for indirect aiming, the sight can be adjusted in horizontal position.

The fastening rod 3, is equipped with a positioning pin 2 and with a seat for positioning and securing the sight in the holder of launcher.

In order to put the mechanism of the transversal swinging a medium position, the two indexes shall be used, one being on the cover of body and the other put on the rod 3.

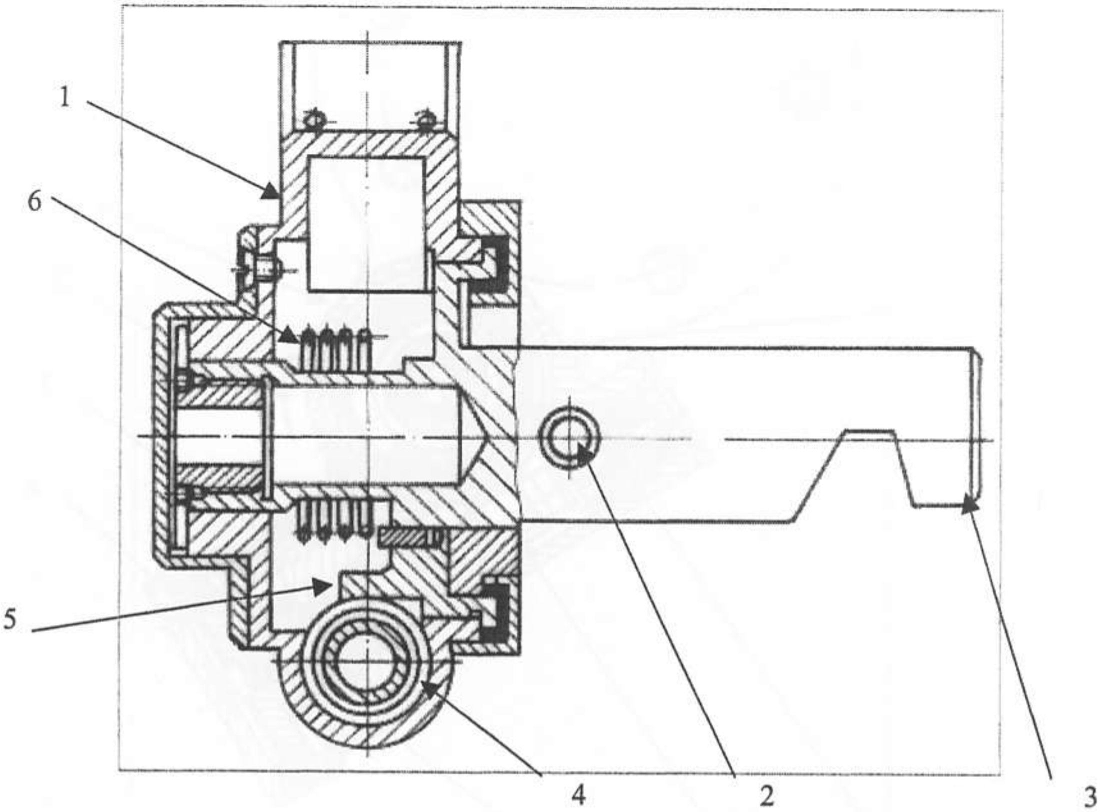


Fig. 24. The mechanism of the transversal swinging:
1 – body; 2 – pin; 3 – shaft; 4 – worm; 5 – worm sector; 6 – spring.

Illuminating device

It is a subassembly of the sight AOAG – 9M, utilized for night operations. It is composed of a cable with two ramifications „a" and „b".

At the end of the cable, there is the contact cap, which is connected to battery. At the end of the two ramifications there are two lamps: the lamps of telescope reticules (for direct aiming and for indirect aiming) 3 and the lamps for mechanism scales of the telescope for indirect aiming 4.

The two lamps are attached to the sight on dovetail guides and fastened with bolts.

The light flux of reticule lamps is adjusted by means of a membrane with which the body is equipped.

The power supply is a battery, of type NKN 13. On delivery, the battery is loaded again by filling it with electrolyte when the sight is utilized for a long time, during the night (applications, battles).

When loads the battery, it shall be taken into consideration that the filling liquid shall exceed the plates of battery. After closing the tank, the terminals must be well wiped and the contacts correctly.

The sight mechanism AOAG –9M and the kit of spare parts, tools, accessories are packed and delivered in a box (fig. 25).

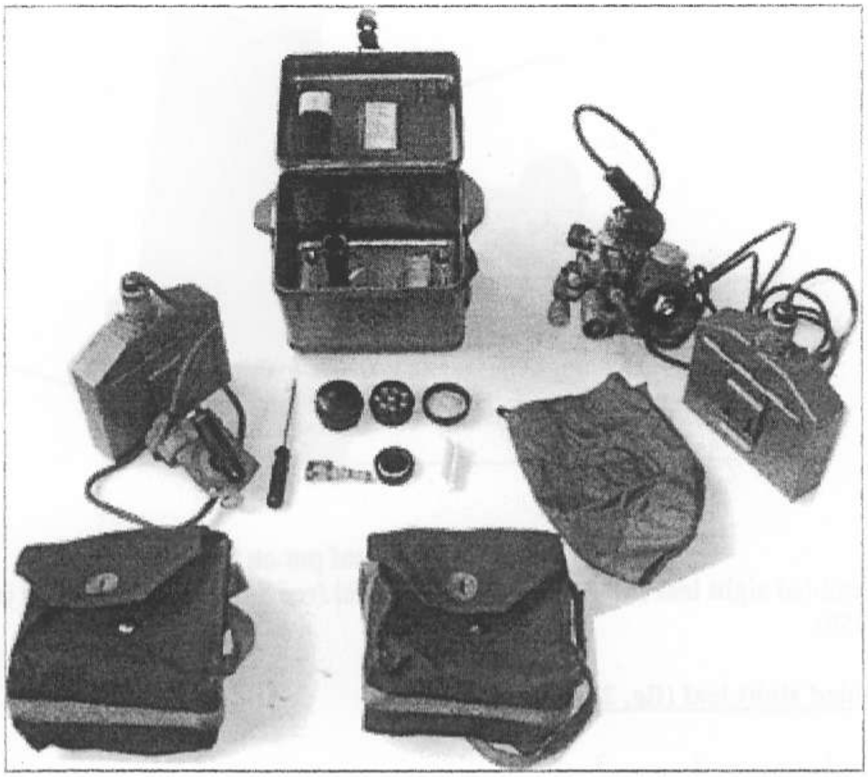


Fig. 25. The box the optical sight AOAG – 9M and the individual kit of spare parts, tools, accessories.

Besides the kit of spare parts, tools, accessories 1/1, there are the following kits:

- kit for 6 sight mechanism (kit 1/6);
- repairing kit for 50 sight mechanism (kit 1/50).

The composition of the kits 1/1, 1/6 and 1/50 is shown in the annexes 1, 2, 3.

Mechanism (open rear) sight

It is designed for orientation of the launcher AG – 9M to the target, in case the sight mechanism was out of order.

It is composed of an assembled front sight 1 (fig. 26) and assembled sight leaf 1 (fig. 27). The assembled sight leaf is fastened on holder 3 (fig. 27), and it is held in work position by a spring.

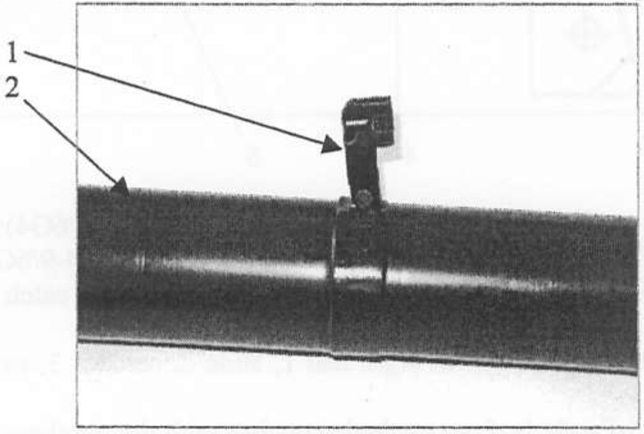


Fig. 26. The assembled front sight put on the barrel:
1 – assembled front sight (assy. 1-1/6G4); 2 – barrel (rep 1-1/6G4).

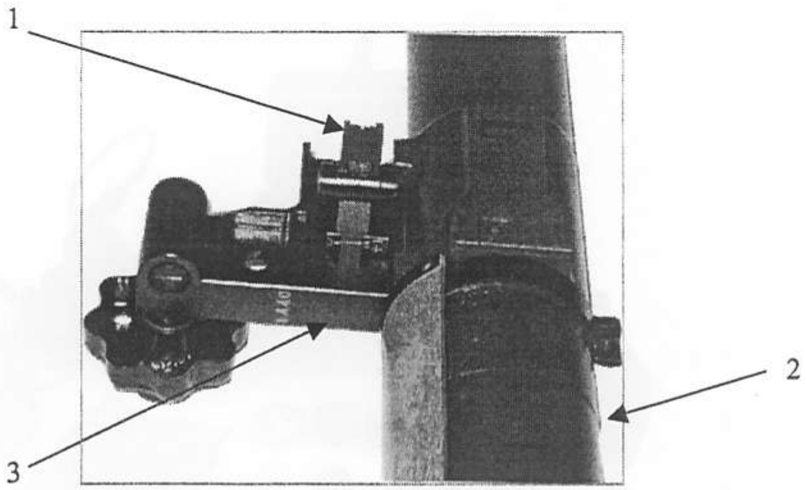


Fig. 27. The sight leaf put on the barrel:
1 – assembled sight leaf (assy. 4-3/6G4); 2 – barrel (rep 1-1/6G4); 3 – holder (assy. 4M/M356).

Assembled sight leaf (fig. 28)

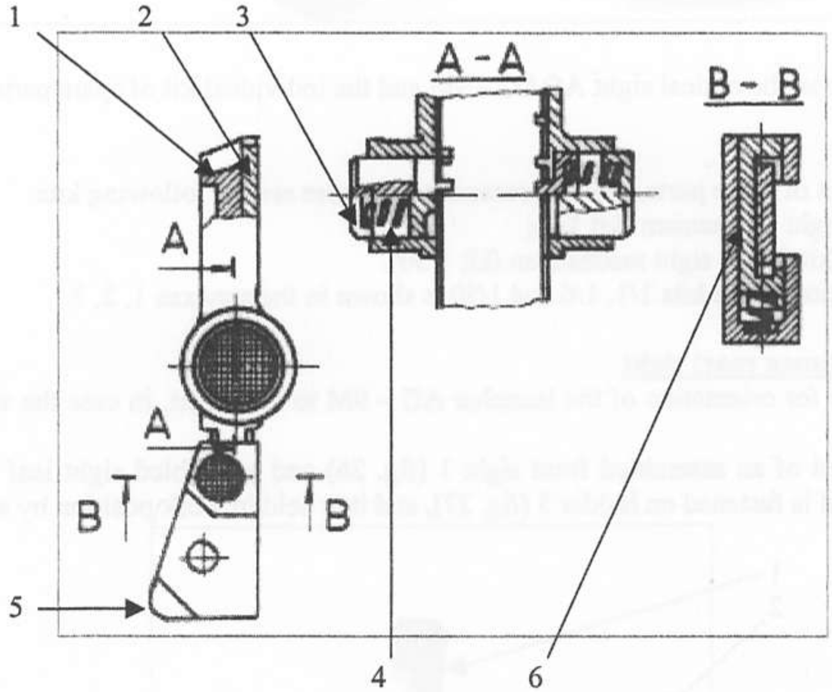


Fig. 28. The assembled sight leaf (assy. 4-3/6G4):
1 – sight leaf (rep 4-7/6G4); 2 – slide (rep 4-8/6G4); 3 – catch (rep 4-9/6G4);
4 – catch spring (rep 4-10/6G4); 5 – safety lock (rep 4-11/6G4); 6 – catch (rep 4-12/6G4).

The assembled sight leaf consists of sight leaf 1, slide 2, catches 3, catch spring 4, lock 5 and catch 6.

On the left and right of sight leaf are marked scratches with the numbers 4, 6, 8, 9, 10, 11, 12, 13 corresponding to the distances of 400, 600, 800, 900, 1000, 1100, 1200, 1300.

On the sight leaf, the slide 2 glides, moving up and down. The slide has a notch for distance adjustment and in given position, it is fasten by two catches 3, actuated by the spring 4.

For introducing the temperature corrections, on the safety lock 5, there are scratches marked with „0" , „+" and „ – ".

The temperature correction is shown as fallows:

- for the temperature range – 40°C ÷ – 10°C the mark „ – " is put on the index;
- for the temperature range – 10°C ÷ + 10°C the mark „ 0 " is put on the index;
- for the temperature range + 10°C ÷ + 50°C the mark „ + " is put on the index;

To enter the temperature correction, it is necessary to push on the catch 6 (by means of a peg or small rod) placed on the safety lock 5, at its level, and moving the sight leaf up and down, the scratch traced on it must fit with the respective scratch from the safety lock 5 („–" ; „0" ; „+").

Assembled front sight (fig. 29)

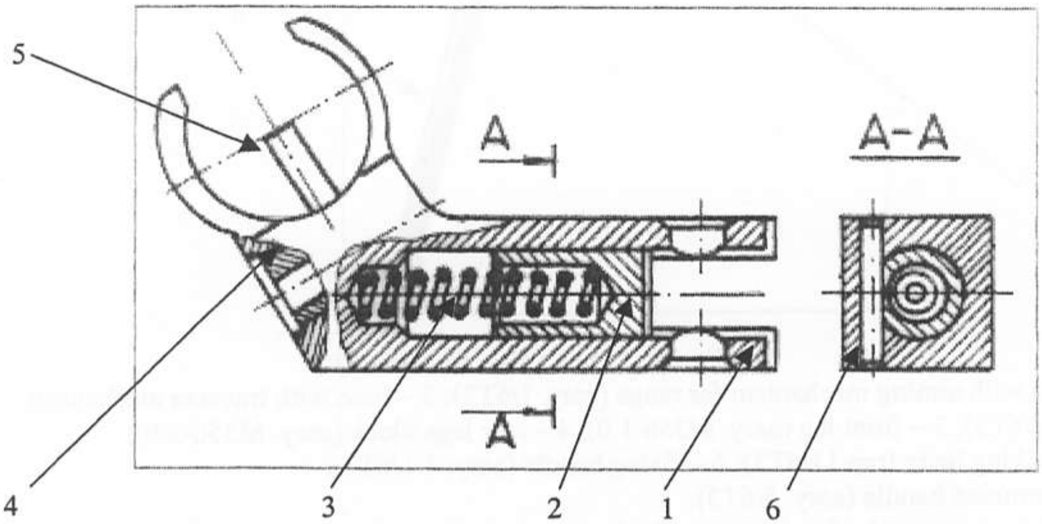


Fig. 29. Assembled front sight (assy. 1-1/6G4):
1 – front sight base (rep 1-2/6G4); 2 – catch (rep 1-3/6G4); 3 – catch spring (rep 1-7/6G4);
4 – bush (rep 1-5/6G4); 5 – front sight (rep 1-6/6G4); 6 – pin Ø3.

The front sight is composed of: front sight base 1, catch 2, catch spring 3, bush 4, front sight 5 and pin 6.

The base of front sight serves for fastening on it, the all the components parts of assembly and for it on the barrel.

In the base of front sight there are perforated holes, where the bush and front sight are placed, and the place for mounting the catch with spring.

The catch is designed to adjust the base of front sight in fight position (open) and travel position (closed).

The catch is equipped with a pin, against fall from place. Screwing or unscrewing it in bush performs the vertical adjustment of front sight, and the horizontal by moving the bush with light hits.

2.2.5. Tripod

The tripod (fig. 30) is designed to provide for the angles of inclination of the barrel, for firing.

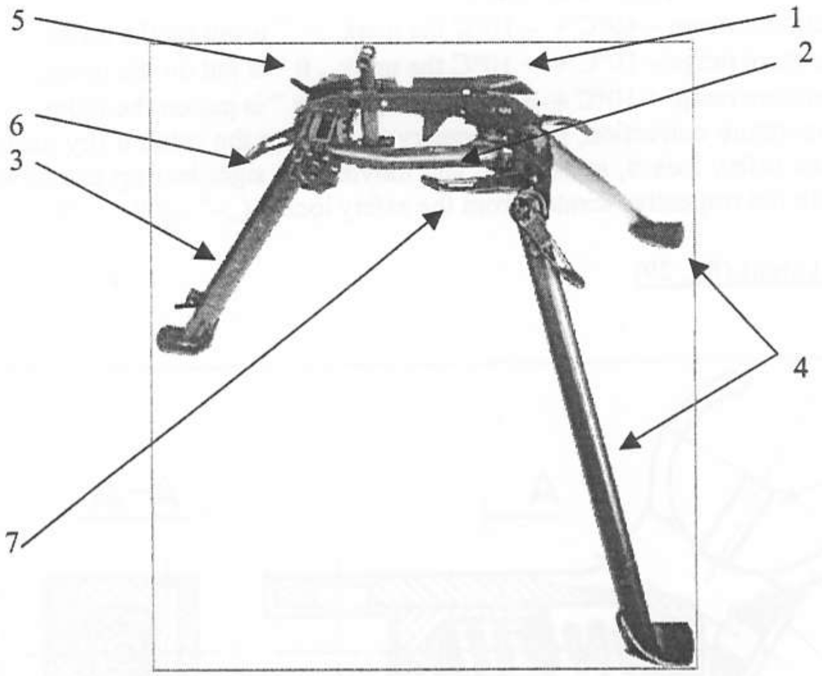


Fig. 30. Tripod (assy. M 356 – 0):
1 – butt with aiming mechanism for range (assy. 1/6T3); 2 – base with traverse mechanism (assy. 2/6T3); 3 – front leg (assy. M356-1.0); 4 – rear legs block (assy. M356-2.0);
5 – blocking lever (rep 11/6T3); 6 – fixing handle (assy. 4-1/6T3);
7 – assembled handle (assy. 5/6T3).

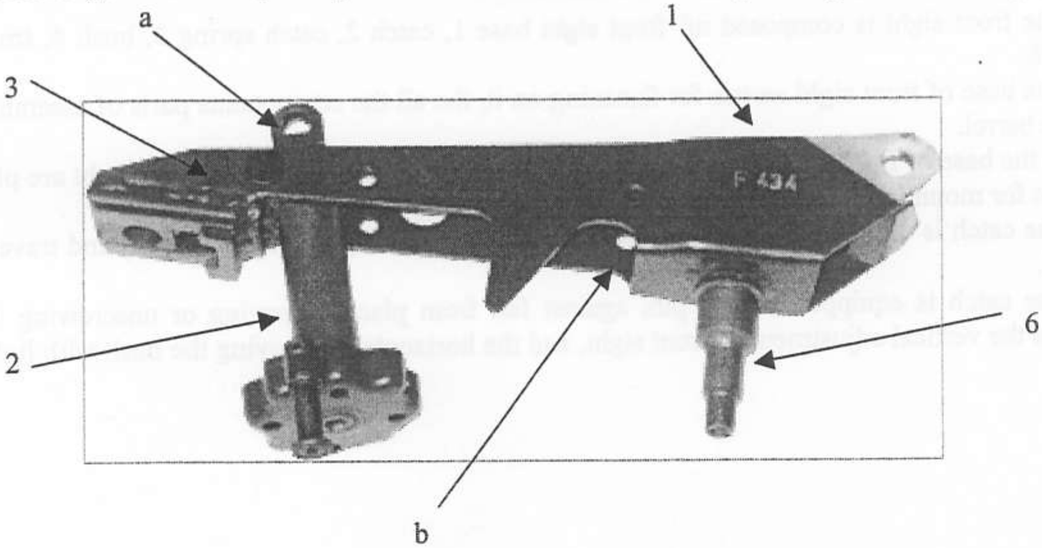
Tripod is composed of a butt 1 with the range aiming mechanism, the base 2 with traverse mechanism, front leg 3 and rear legs 4.

In front of tripod is placed the blocking lever 5.

The butt with range aiming mechanism (fig. 31) serves for putting the barrel on tripod and the vertical angles of barrel. The generator of electrical fire mechanism is put on the butt.

The butt 1 is a welded structure. On the front side of the butt, is put the range aiming mechanism 2, by means of the shaft 3, which is secured by the washer 5 and nut 4. At the rear, there is the welded pivot 6, which serves for fastening the butt on the base of tripod.

The holes „a" serves for putting the barrel on butt and the holes „b" for generator setting.



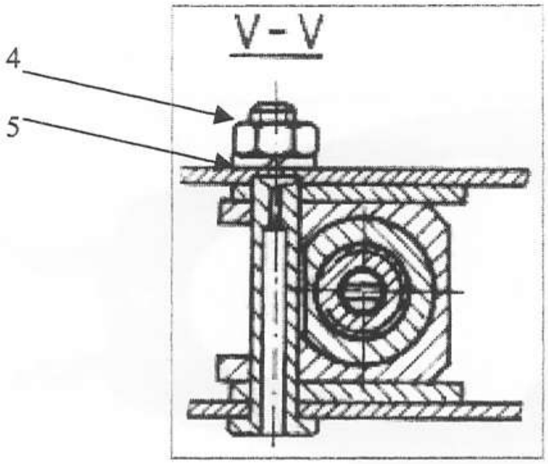


Fig. 31. The butt with the range aiming mechanism (assy. 1/6T3):
1 – assembled butt (assy. 1-1/6T3); 2 – range aiming mechanism (assy. 1-3/6T3); 3 – shaft (rep 1-12/6T3); 4 – nut; 5 – washer; 6 – pivot (rep 1-5/6T3); a,b – holes.

Aiming mechanism in range

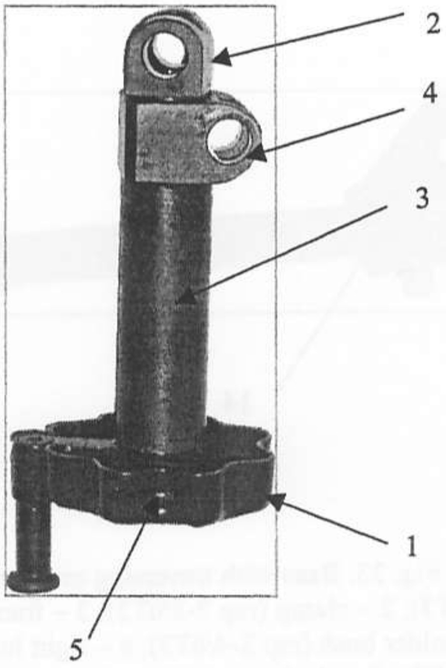


Fig. 32. Aiming mechanism in range (assy. 1-3/6T3):
1 – hand wheel (assy. 1-2/6T3); 2 – interior tub (rep 1-8/6T3); 3 – screw (rep 1-9/6T3); 4 – mechanism holder (rep 1-10/6T3); 5 – pin ∅ 4.

The aiming mechanism in range is designed to provide the necessary angle for the barrel, in vertical plane. It is composed of hand wheel 1, interior tube 2, screw 3, mechanism holder 4 and pin 5.

When turns the hand wheel 1, the screw 3 rotates. As the interior tube 2 cannot rotate, the screw, being screwed up in the interior tube 2 shall move it, lifting or lowering the barrel.

If the aiming mechanism in range cannot give the barrel the required angle, then, the vertical coarse adjustment is performed by means of telescopic front leg.

Base with traversing mechanism

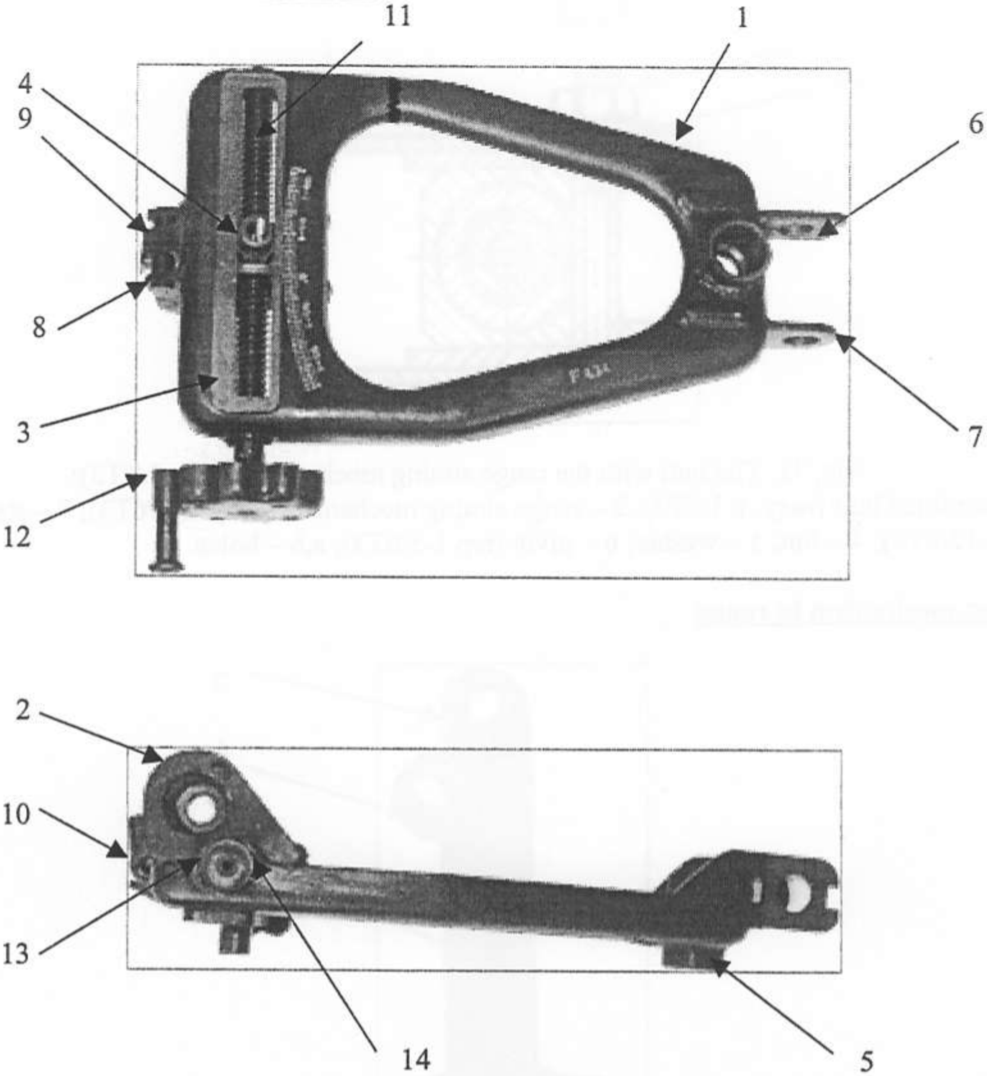


Fig. 33. Base with traversing mechanism (assy. 2/6T3):
1 – base (assy. 2-1/6T3); 2 – clamp (rep 2-3/6T3); 3 – frame (rep 2-2/6T3); 4 – carriage (rep 2-10/6T3); 5 – holder bush (rep 2-4/6T3); 6 – right lug (rep 2-5/6T3); 7 – left lug (rep 2-6/6T3); 8 – shaft (rep 2-21/6T3); 9 – catch (rep 2-20/6T3); 10 – spring (rep 2-22/6T3); 11 – lead screw (rep 2-23/6T3); 12 – hand wheel (assy. 2-5/6T3); 13 – bush (rep 2-24/6T3); 14 – pin ∅ 3.

The base with traversing mechanism is designed for fastening the elements of tripod. On the base, in front, the clamp 2 is put on, the frame 3, in the window of it is the carriage 4 and the component parts of traverse mechanism. On the base 1, at the back, the bush of holder is welded 5, in which the pivot and lugs get in; right 6 and left 7 for fastening the seat of back legs.

On the upper part of the base, the thousandths scale is marked, with the value of a division of 0 – 10. The scale has three graduations: 0; 1 – 00; 2 – 00.

The clamp 2 serves for securing the front leg. In the front side of clamp, by the spring 8, the catch 9 is fastening with the spring 10. The catch is used as a stopper for the front leg, in fire position.

Traversing mechanism

It is designed to point the launcher to target, in a sector of ± 15°. It is composed of a lead screw 11, a carriage 4, hand wheel 12, and blocking lever 5 (fig. 33) in travel (march) position. The lead screw is screwed in the carriage, and it is fastened on the right side with bush 13 and pin 14, and on the left side with hand wheel and a pin 14.

Actuating the hand wheel 12, the lead screw 11 rotates. As the carriage cannot rotate, the lead screw, being screwed or unscrewed, move the carriage on the right or on the left, moving the launcher in horizontal.

The front leg 3 (fig. 30)

The front leg is composed of external leg 1 (fig. 34), on which the clamping bush 2 and leg lug are welded 3, the inner leg 4, on which the positioning bush and the sole of leg 5, the clamping screw 6, secured by the splint 7.

The front leg has a variable length (telescopic leg), hawing 4 positions for the inclination of barrel, up to an angle of 25°, thus:

- position „0” for the angles of – 3° up to + 7°40′ (for antitank grenade);
- position „1” for angles of maximum +15°;
- position „2” for angles of maximum +20°;
- position „3” for angles of maximum +25°.

In the respective position, the telescopic leg is fixed by means of the clamping screw 7 and by means of handle 6 (fig. 30) is secured to base.

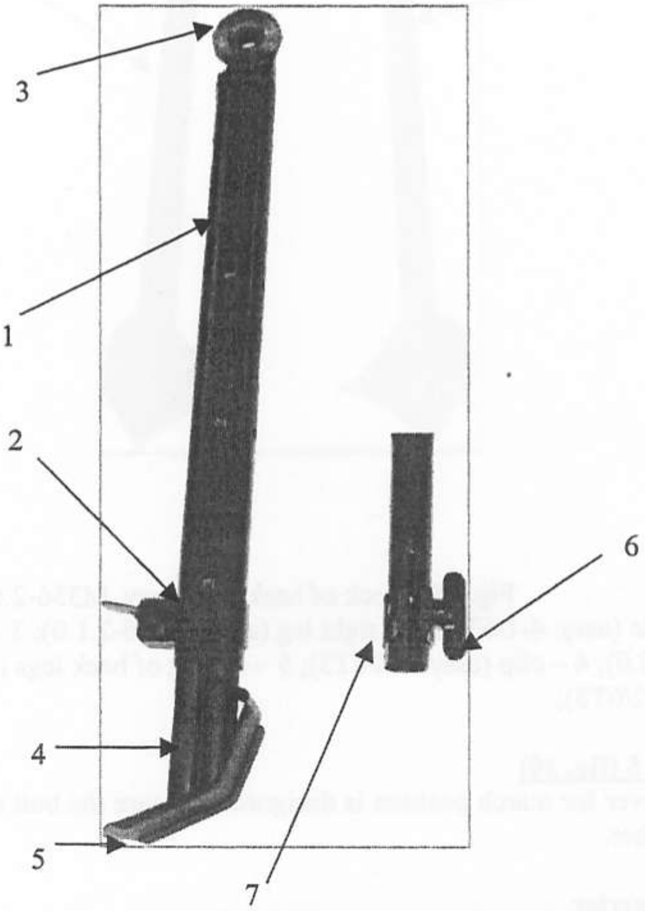


Fig. 34. Assembled front leg (assy. M356-1.0)

1 – assembled external leg (assy. M356-1.1.0); 2 – clamping bush (rep M356 –1.1.2);
3 – leg lug (rep 3-2/6T3); 4 – interior lug (assy. M356-1.2.0); 5 – front leg foot
(rep M356-1.2.3); 6 – clamping screw (assy. M356-1.1.3.0);
7 – splint.

Back legs block 4 (fig. 30)

The block of back legs is composed of two fixing handles 1 (fig. 35), the right leg 2, left leg 3, two clips 4 of the joint, legs cover 5 and securing handle 7 (fig. 30) of legs block.

On the cover 5, two lugs are welded 6 (fig. 35), designed for securing the block of back legs to the base of tripod.

The two back legs can rotate simultaneously. The beck legs setting 5 (fig. 35) is jointed secured to the butt of tripod, and it is put into it by means of handle 7 (fig. 30), placed on the left of butt. For a simultaneously rotation of back legs, it is necessary to lower the handle 7 down (fig. 30), and then the setting 5 (fig. 35), together with legs can be turned (and fastened, putting the handle in horizontal position), at an angle required, permitted by tripod.

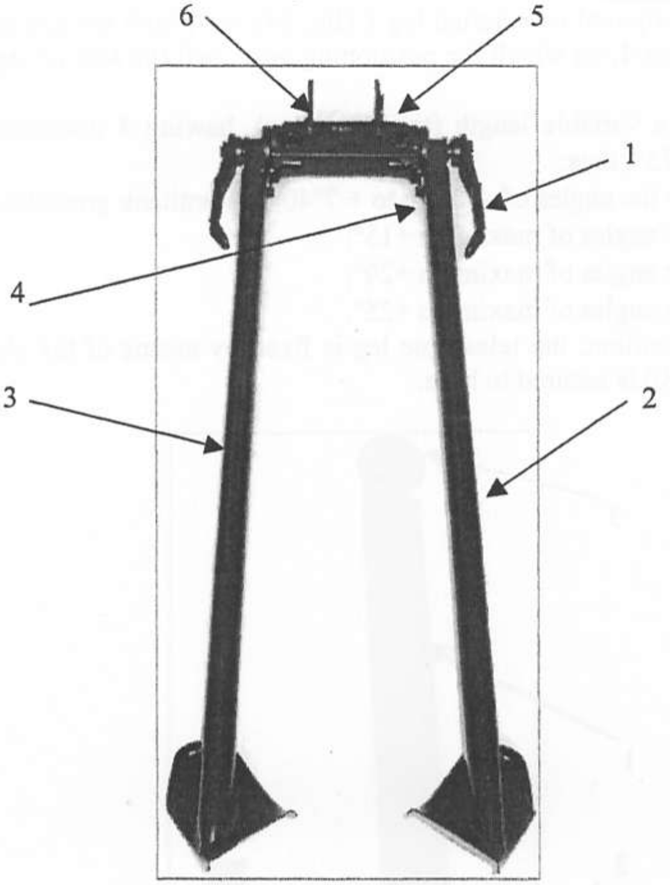


Fig. 35. Block of back legs (assy. M356-2.0):
1 – fixing handle (assy. 4-1/6T3); 2 – right leg (assy. M356-2.1.0); 3 – left leg (assy. M356-2.2.0); 4 – clip (assy. 4-4/6T3); 5 – setting of back legs (assy. 4-5/6T3); 6 – lug (rep 4-12/6T3);

Blocking lever 5 (fig. 30)

The blocking lever for march position is designed to secure the butt to the base of tripod, in order to transport the launcher.

2.2.6. Wheel carrier

The personnel design the wheel carrier for manual transportation of grenade launcher.

The wheel carrier (fig. 36) is composed of a shaft 1, with two wheels 2 and the base of assembled shaft 3.

The base of assembled shaft is secured to back legs setting 5 (fig. 35) by means of screws.

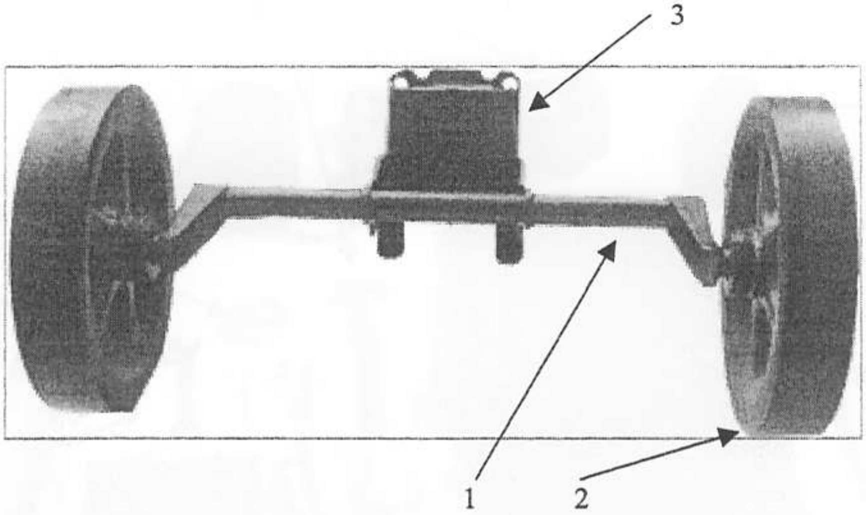


Fig. 36. Assembled wheel carrier (assy. 6F5):
1 – assembled shaft (assy. 2C/6F5); 2 – wheel (assy. 1/6F5); 3 – base of assembled shaft (assy. 2-4B/6F5).

Securing of wheel carrier to back legs setting, does not render more difficult firing with launcher, in this case, the launcher is supported by both wheels and the front leg; the back legs must be collapsible for ward and folded length wise the barrel.

When the launcher is carried on wheels, the front leg shall swing out in the maximum upper position lengthwise the barrel.

The assembled wheel carrier (assy. 6F5) – will be delivered on the custumer request.

2.2.7. Spare parts, tools and accessories

The spare parts, tools and accessories are delivered for one product (individual kit 1/1) for six products (group kit 1/6) and for 50 products (repairing kit 1/50).

The individual kit (fig. 37) is designed for current operation of launcher. In it, are included two contacts for the electrical fire mechanism, tools (hammer, peg, wrench, screwdriver) accessories (wiper with cover for cleaning the channel of barrel, brush with cover for cleaning and greasing the chamber, covers for muzzle and breech piece of barrel, bags for ammunition transportation, thermo – insulating gloves, diopter for checking the electrical wiring of sight mechanism).

The individual kit is put into the bag of spare parts, tools, accessories, which together with wiper and brush is held in the case of launcher.

The tools, spare parts and accessories for the optical sight are held in the box of sight mechanism.

The kit of group for tools, spare parts, and accessories is designed complete disassembling and assembling of launcher, technical maintenance, medium repairs, and to complete the individual kit of spare parts, tools, and accessories.

The kit of spare parts, tools, accessories for repairs is designed for medium and overhaul repairs in the shops for repair, under the supervision of a specialized personnel, and to complete the kits of spare parts, tools, accessories.

The individual kit of spare parts, tools accessories is delivered together with the product, and the group kits (1/6) and repair (1/50), on the basis of separate order.

The composition of the individual, group and repair kits of spare parts, tools and accessories is shown in annex 4.

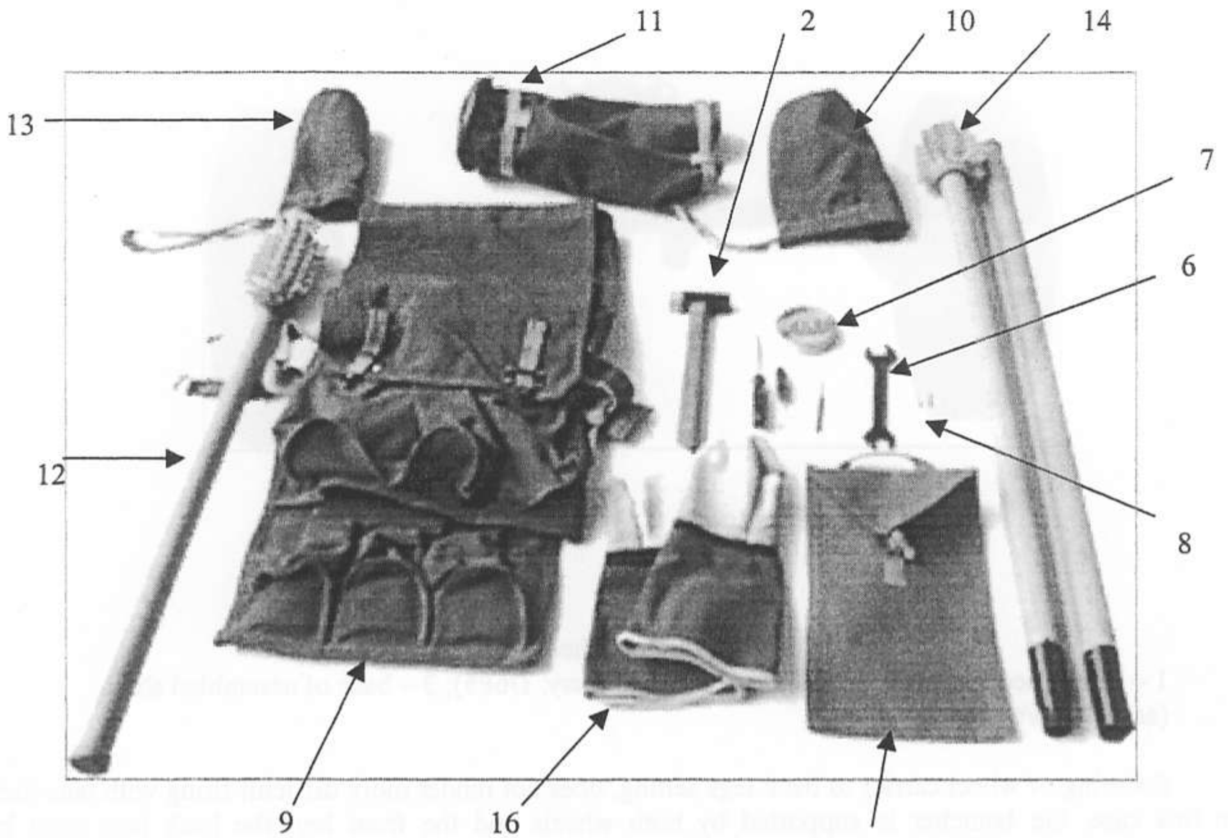


Fig. 37. The individual kit of spare parts, tools, accessories of the launcher AG – 9M:
1 – bag for spare parts, tools, accessories (assy. 4/6Ş17); 2 – hammer (assy. 1/6I8); 3 – brush (assy. 3/6I8); 4 – peg ∅ 3 (rep 1/6I8); 5 – screwdriver SG 0,8x200 STAS 7917 – 86; 6 – wrench 17x22; 7 – diopter (assy. 6/6I8); 8 – contactor (assy. 5/6G4); 9 – bag for ammunition (assy. 6Ş16); 10 – cover for muzzle (assy. 1/6Ş17); 11 – cover for breech piece of barrel (assy. 2/6Ş17); 12 – wiper (assy. 4/6I8); 13 – wiper cover (assy. 3/6Ş17); 14 – brush (assy. 5/6I8); 15 – brush cover (assy. 5/6Ş17); 16 – thermo – insulating.

Part II

Instructions for maintenance and repairing of launcher

Chapter I. Maintenance of launcher

The launcher must be kept in good working condition and cleaning.

The launcher being in a continuous operation must be cleaned and greased after each fire, march or drill, and when it is kept in the open air, it must be cleaned and greased every time when the weather changes significantly (after rain, snow, wind with dust, etc.)

For cleaning and greasing the launcher, the following can be used:

- petroleum for elimination of slag from the channel of barrel and from the fire mechanisms;
- grease for weapon, for greasing the channel of barrel and the parts of all mechanisms, no matter the season of year and the place;
- clean cotton;
- tows, cleaned, without wooden parts.

For a more comfortable cleaning of the grooves, channels and holes, it is necessary to use wooden rods. The holes for contacts are cleaned by means of a circular brush (assy. 3/6I8).

For washing the snow, especially after maintenance of launcher in warehouse kerosene shall be used.

After utilization, for cleaning the water or the kerosene, all the components and mechanisms of launcher must be well wiped and greased.

For cleaning the channels of barrel, the chamber after firing, it is necessary to wrap tows, imbued with petroleum on the brush of wiper (assy. 4/6I8), then the wiper is put in, from the side of muzzle and move along the channel of barrel, forward, and back wards, with simultaneous twisting, then the wiper is removed.

The same operation is performed again, by putting the wiper into, from the side of breechblock (the breech piece).

The chamber is cleaned by the brush (assy. 5/6I8).

After cleaning, the wiper shall be well wiped, and the channel of barrel is wiped with tows, and then with clean cotton.

Cleaning is performed until the cotton shall be clean. After finding that the barrel is clean, it shall be coated by a thin layer of grease.

On this purpose, it is necessary to wrap clean cotton on the brush of the wiper, soaked with grease, and then it shall be passed through the channel of barrel, four or five times.

At the same time, the mechanisms of the launcher shall be disassembled and cleaned.

The generator unit shall not be disassembled – outside it must be wiped with dry cotton, and the external metallic parts are gently greased with grease for weapon. Penetration of grease into the generator, the (contact) switching installation, and blocking installation is not permitted.

Chapter II Disassembled and assembly of launcher

Disassembled and assembly of launcher can be performed partly or completely.

In subunits, only partial disassembled of launcher is admitted. The complete disassembled of launcher is performed only in shops, under the supervision of the chief of department or of a technician, specialized in launcher structure and in the order of disassembly and assembly.

It is not allowed to disassembly the sight mechanism AOAG –9M and the generator unit of the electrical firing mechanism in the units.

Before disassembled of launcher it is necessary to check the launcher, not to be loaded with ammunition.

On disassembled and assembly of launcher, the fallowing main rules shall be observed:

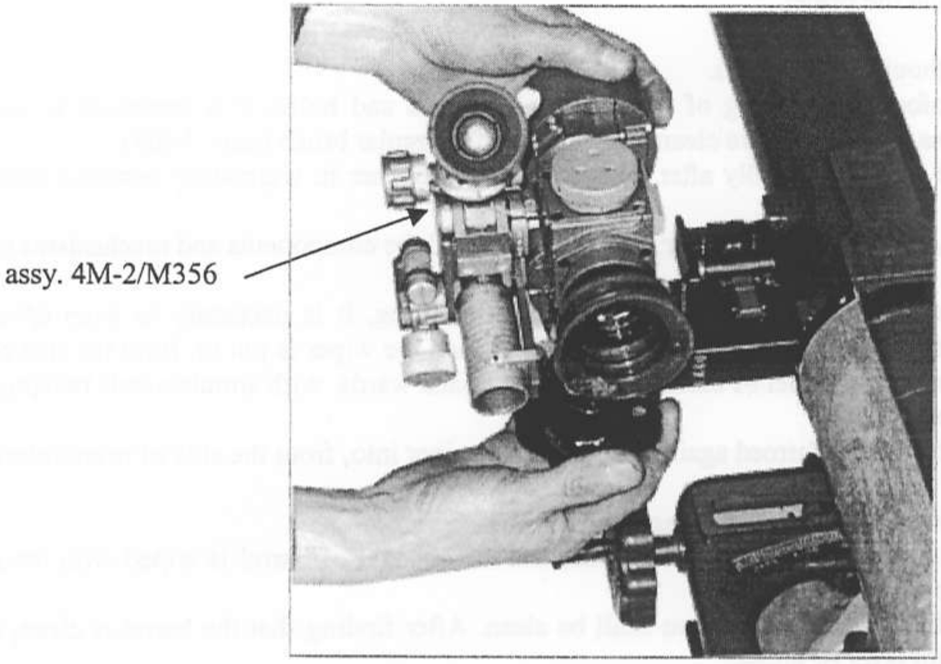
- disassembled of launcher shall be performed on the table, on a clean sheet of tent or plywood;
- standard tools, existing in the kit of spare parts, tools shall be used, only;
- the parts and mechanisms must be put on the table in the sequence of disassembled and shall avoid to hit then against hard objects, or each other;
- on assembly, all fastening components (screws, nuts, pins, washers) shall be put again, in their room, the screws and pins are punched according to the present instructions;

- before assembling, all components shall be wiped carefully and greased with grease for weapon.

2.1 Partial disassembly and assembly of the launcher

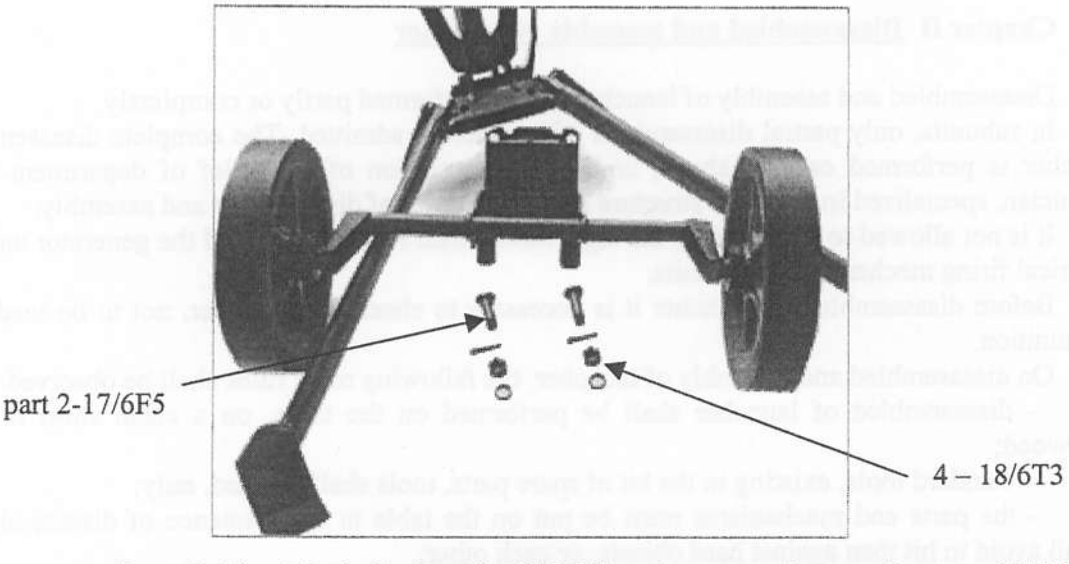
The partial disassembly is performed in the following order:

2.1.1. Disassembling of the optical sight from launcher:



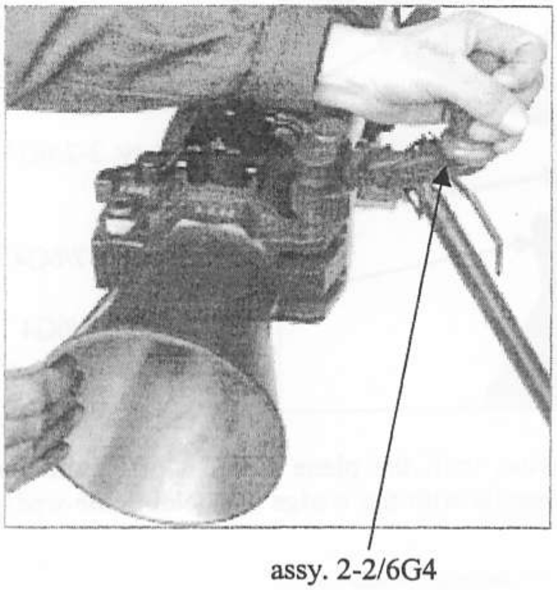
- rotate counterclockwise the knob of sight mechanism holder (assy. 4M-2/M356), up to a gentle clamping of the rod of sight;
- take out the sight mechanism from its seat and put it in its box.

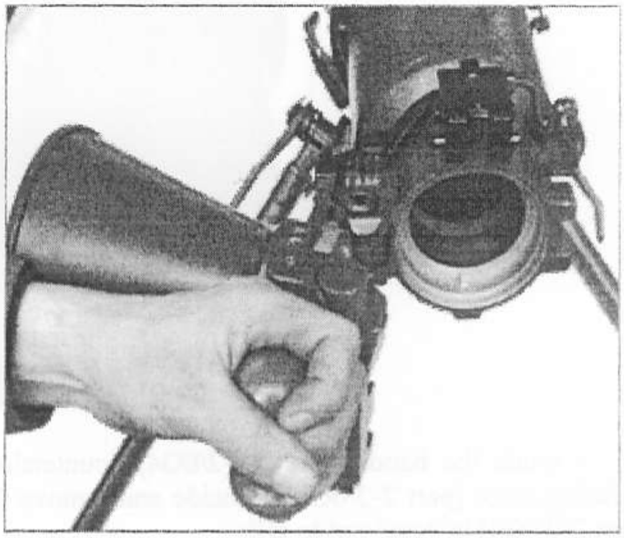
2.1.2. Disassembling of wheel carrier from launcher:



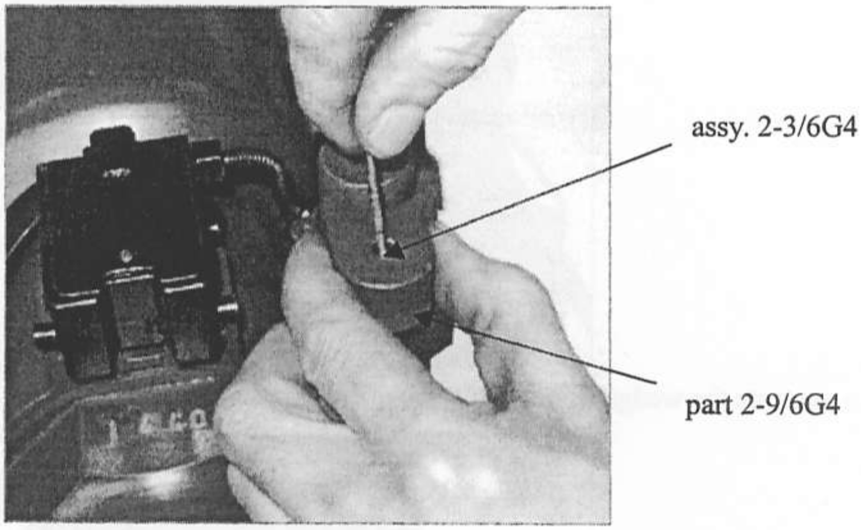
- remove the splint front the bolts (part 2 – 17/6F5) and unscrew the nuts (part 4 – 18/6T3);
- remove the bolts and separate the wheel carrier from tripod.

2.1.3. Disassembling of blocking mechanism and separation of breechblock from barrel:

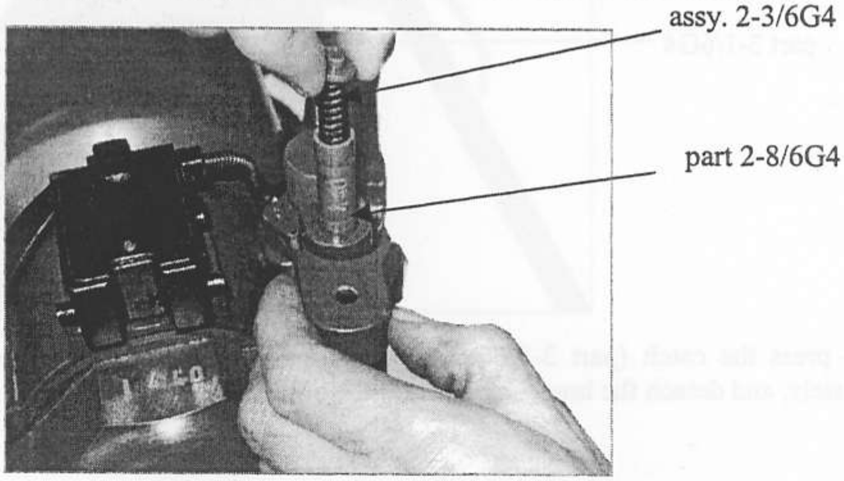




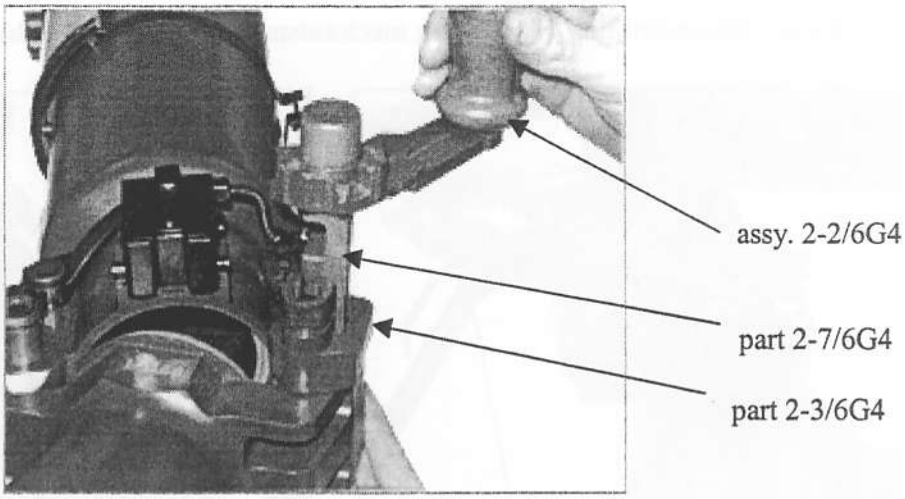
- rotate the handle (assy. 2-2/6G4) down, clockwise and pull back the breechblock until it gets out from the barrel;



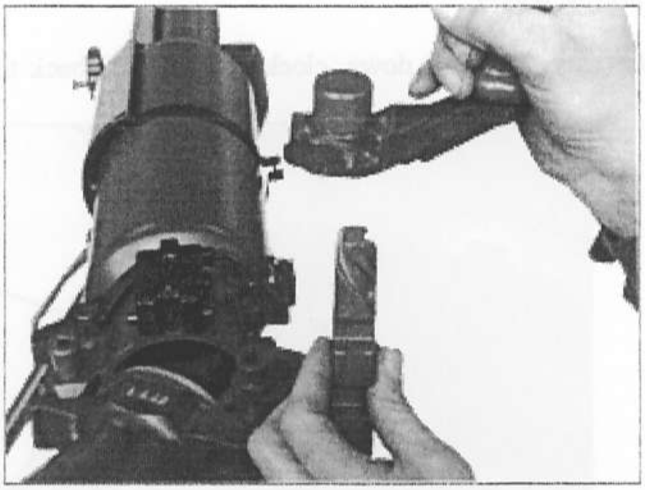
- press the pusher with spring, by a peg (assy. 2-3/6G4) and disassemble the bolt (part 2-9/6G4) moving it back;



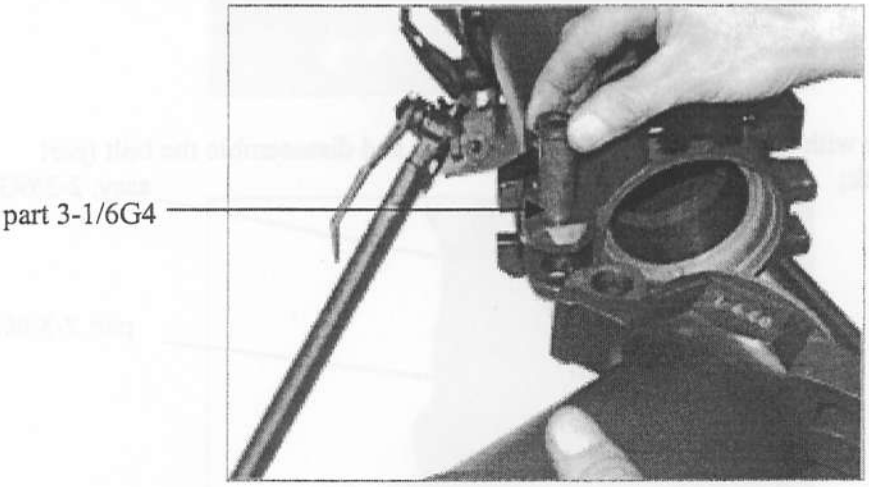
- remove the pusher with spring (assy. 2-3/6G4) and the catch (part 2-8/6G4);



- rotate the handle (assy. 2-2/6G4) counterclockwise, until the plane surfaces of handle and reducing piece (part 2-3/6G4) coincide and remove the handle with the wedge up, holding the wedge (part 2-7/6G4) by hand not to fall;

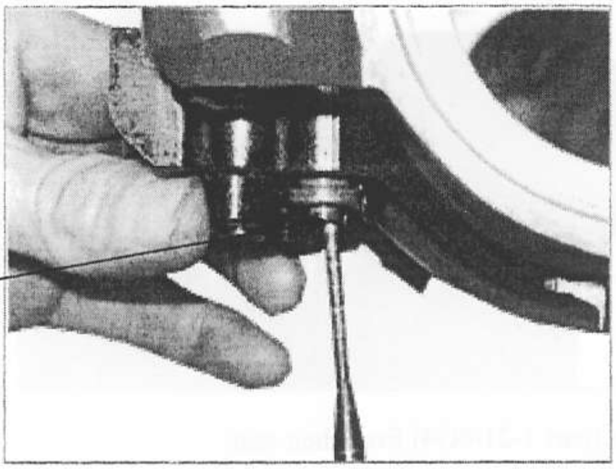


- separate the wedge from handle;

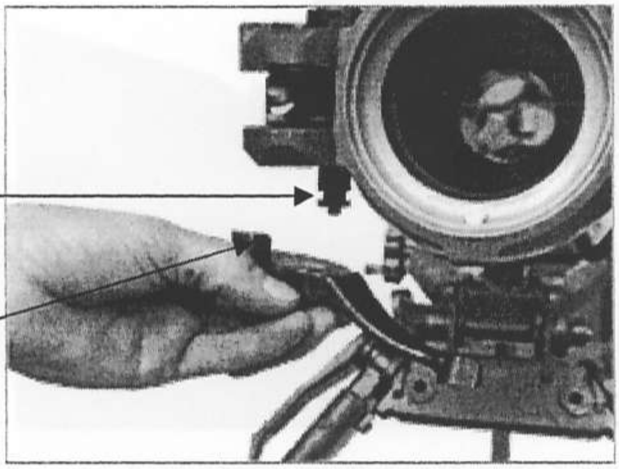


- press the catch (part 3-3/6G4) of shaft (part 3-1/6G4) with a peg, push the shaft upwards completely, and detach the breechblock from the barrel.

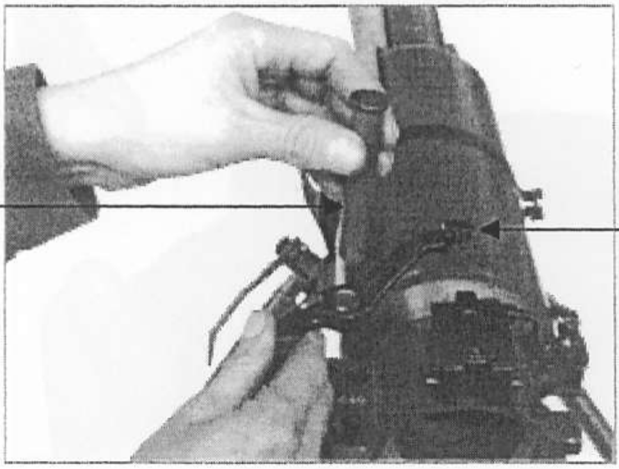
2.1.4. Disassembly of extractor:



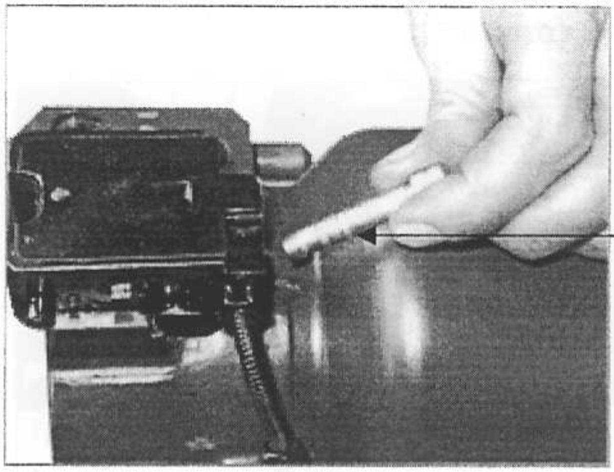
- press with catch peg (part 1-35/6G4) of lever shaft (part 1-24/6G4), rotate the catch (part 1-36/6G4) of upper lever forwards completely;



- remove the lower lever (part 1-22/6G4), by moving down;

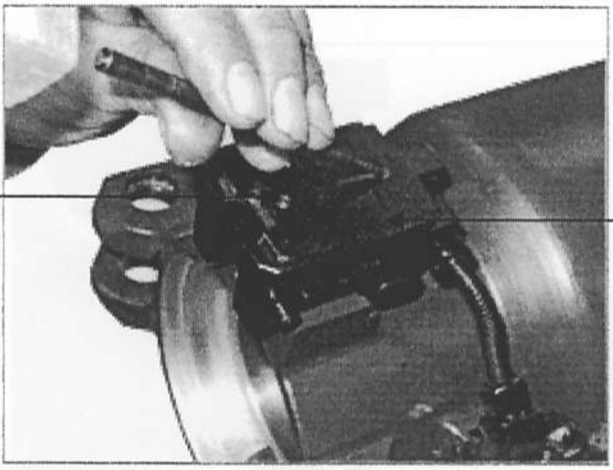


- remove the upper lever (part 1-23/6G4) together with shaft (part 1-24/6G4), and separate the shaft from lever;

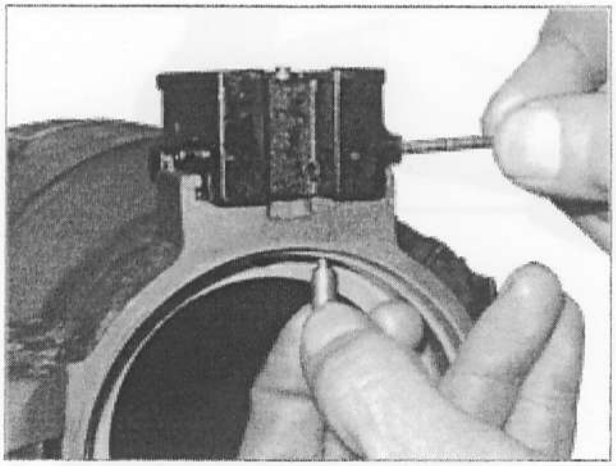


- remove the pushers (part 1-21/6G4) from their seat.

2.1.5. Disassembly of the contacts (assy. 5/6G4):

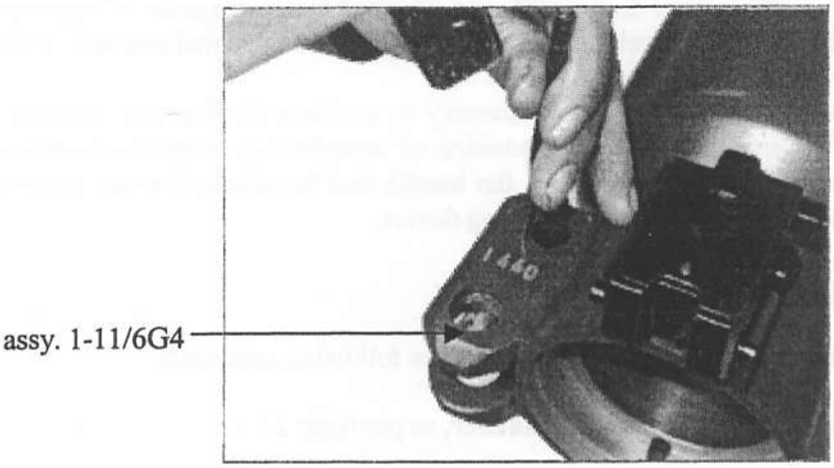


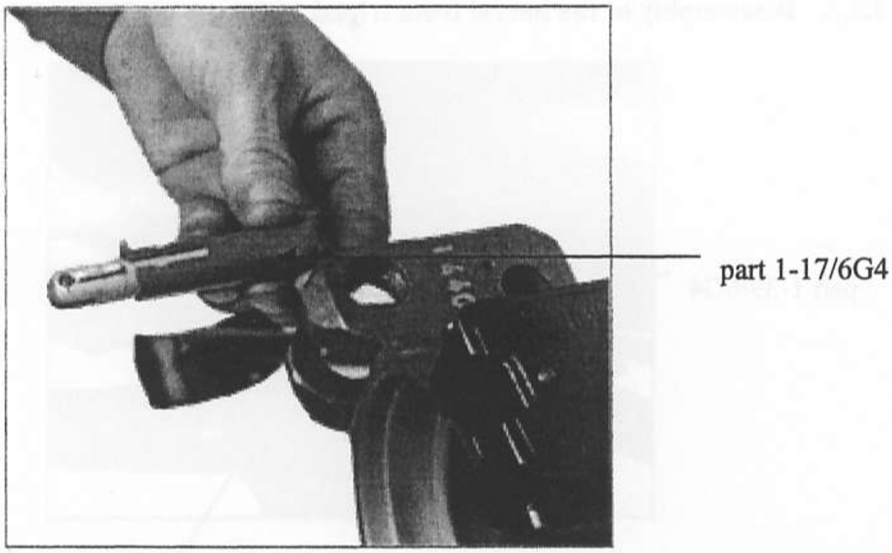
- press the catch (part 6-55/6G4) with the peg, and open the cover (part 6-49/6G4) of the body of switching device using the peg and hammer;



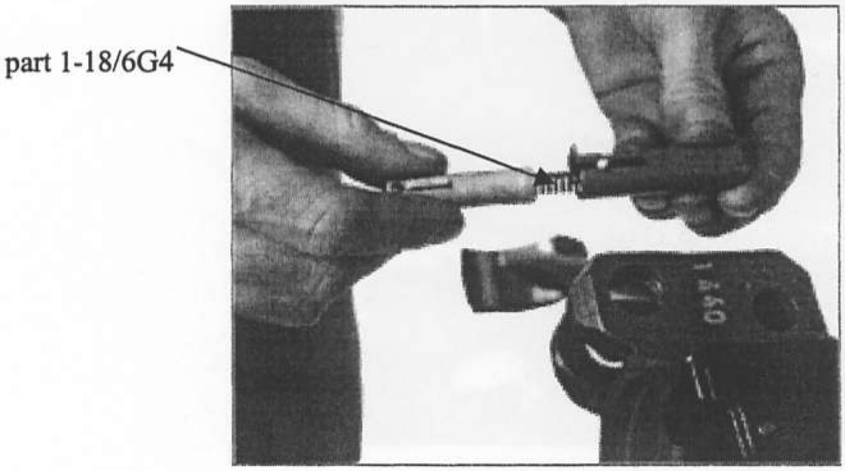
- press down the contacts successively and pushing successively the catches, with the pegs, in the lateral walls of the body of switching device, remove the contacts.

2.1.6. Disassembly of the catch of breechblock (set the breechblock on open position):





- remove the pin Ø 3x50 and remove the body of catch (part 1-17/6G4) together with catch (assy. 1-11/6G4) and catch spring (part 1-18/6G4);



- remove the catch and the spring from body.

NOTE:

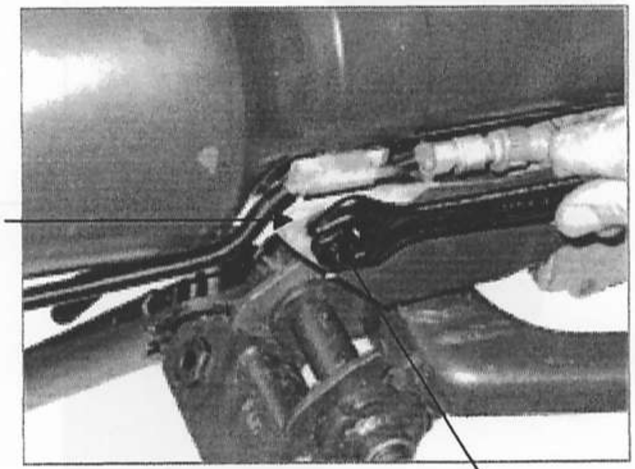
1. Assembly of launcher after partial disassembly is performed in reverse order of disassembly.
2. The contacts and their seats in barrel, before assembling, shall be cleaned and well wiped with dry cotton, without being greased.
3. For checking the correct assembly, it is necessary to perform closing and opening of the channel of barrel few times. In front limit position of breechblock, when the handle rotates, the wedge must move up and down freely, the handle and breechblock must secure safely, and the contacts must be in the body of switching device.

2.2 Complete disassembly and assembly of launcher

The complete disassembly of launcher is performed in the following sequence:

2.2.1. Perform the partial disassembly of launcher, as per them 2.1.

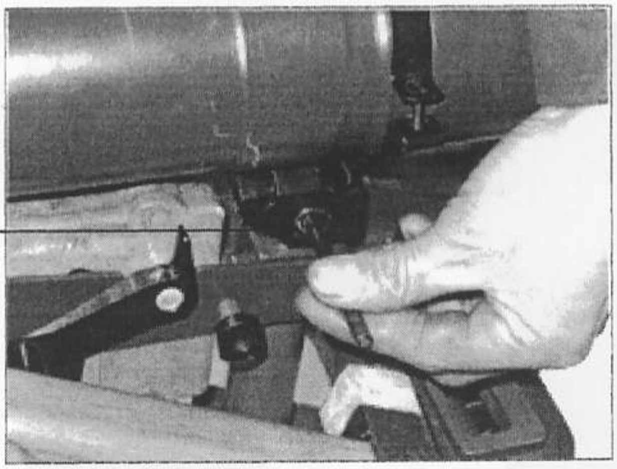
2.2.2. Disassembly of the barrel from tripod:



part 1-39/6G4

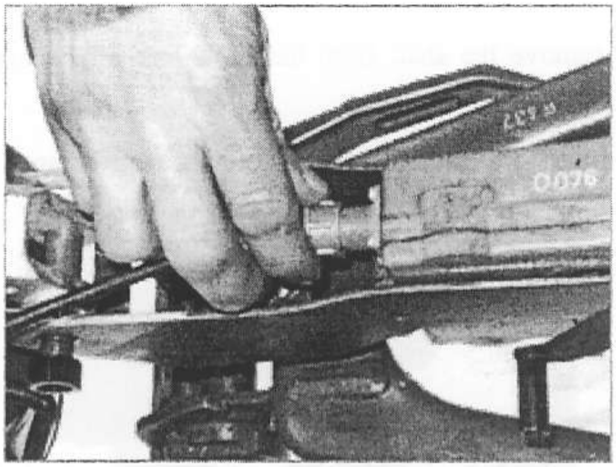
part 1/6T3

- loosen the nut M 12x1,25 of the shaft (part 1/6T3), of back link (part 1-39/6G4) of barrel;

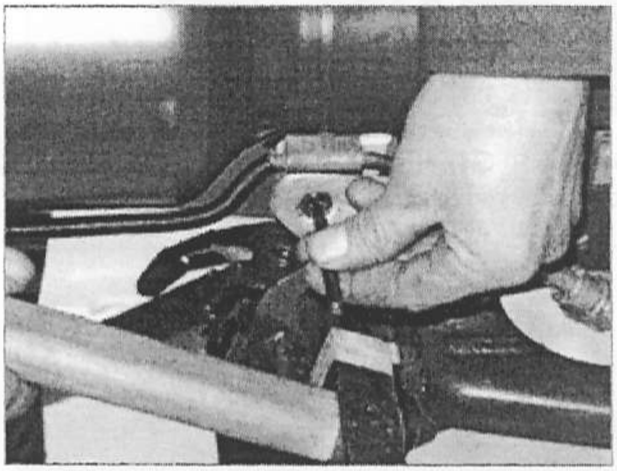


part 1-12/6T3

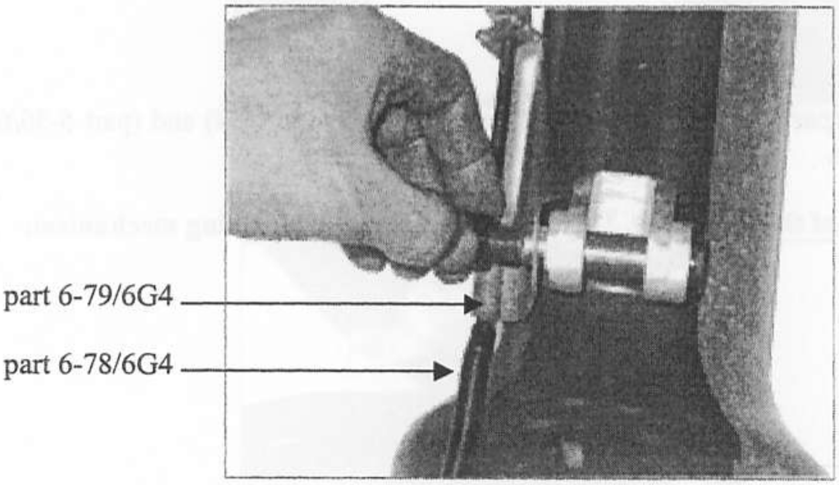
- unscrew the nut M 12x1,25, remove the circlip, remove the shaft of the mechanism (part 1-12/6T3) of front link of the barrel;



- lift the barrel and unscrew the electrical coupling of generator;



- lower the barrel in the initial position, and unscrewing the nut of back link shaft of the barrel, remove the circlip and shaft;

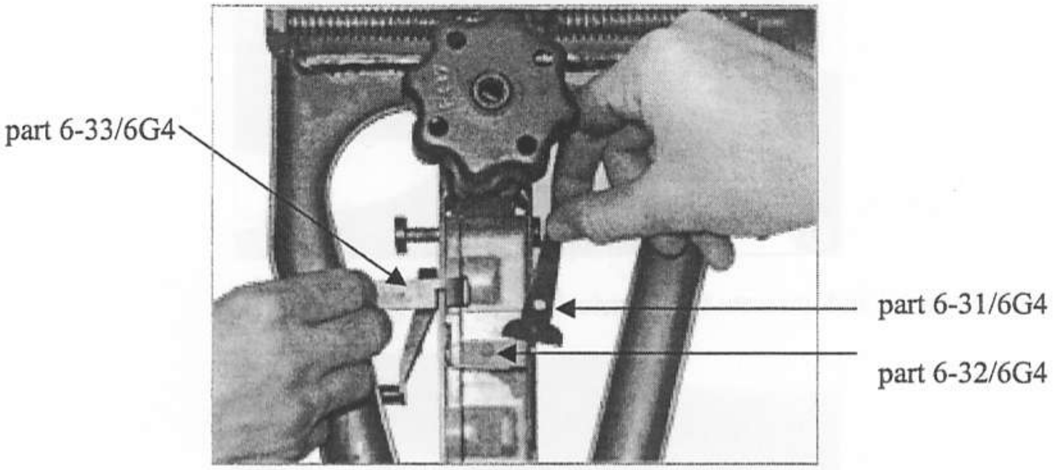


- detach the barrel front tripod, put the shaft into the back circle and put on it the clamp (part 6-79/6G4) of guide of electrical cable (part 6-78/6G4), by means of the nut.

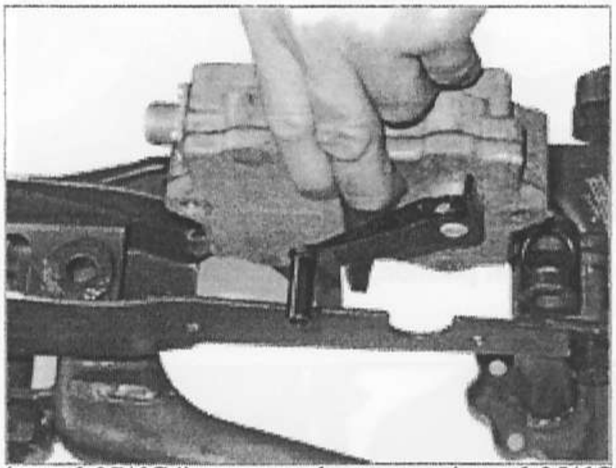
NOTE:

It is not allowed to remove the shaft from the back link of the barrel, before removing the coupling from generator.

2.2.3. Disassembly of generator unit (assy. 6-7A/6G4) from tripod:

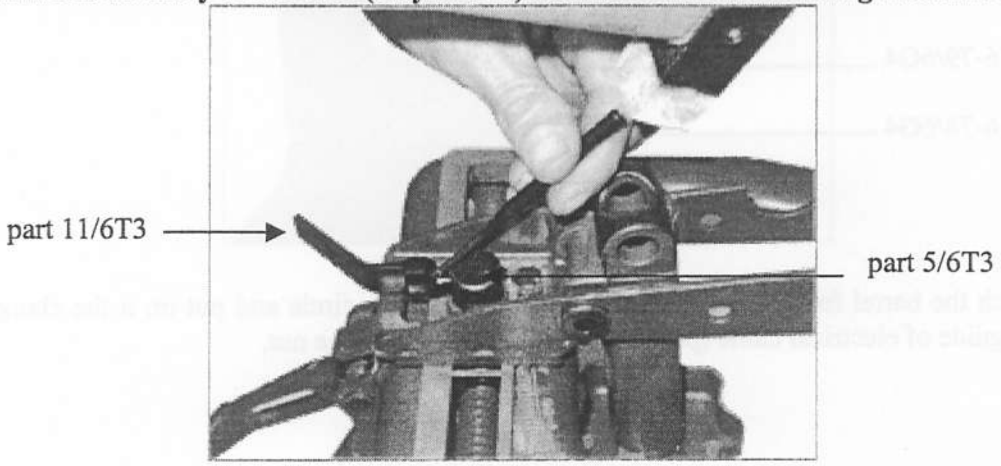


- rotate the spring (part 6-31/6G4) of safety lock (part 6-33/6G4) around the bolt (part 6-32/6G4) and remove the safety lock and the spring on the body of generator;

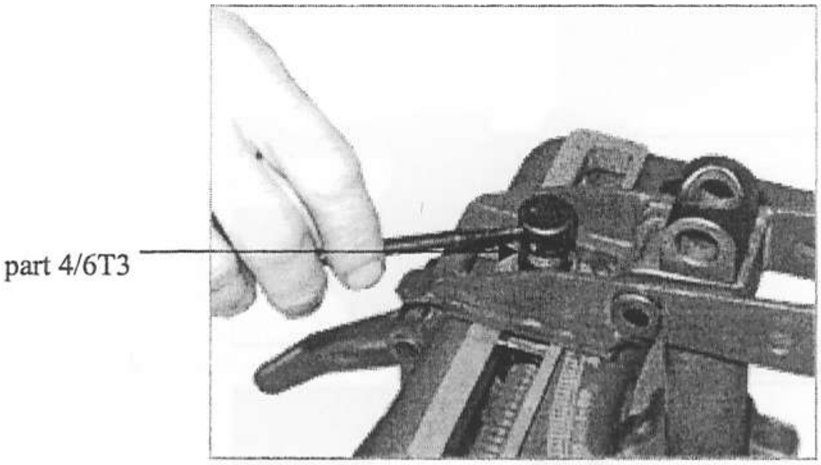


- unscrew the nuts (part 6-37/6G4), remove the screws (part 6-35/6G4) and (part 6-36/6G4) and then remove the generator.

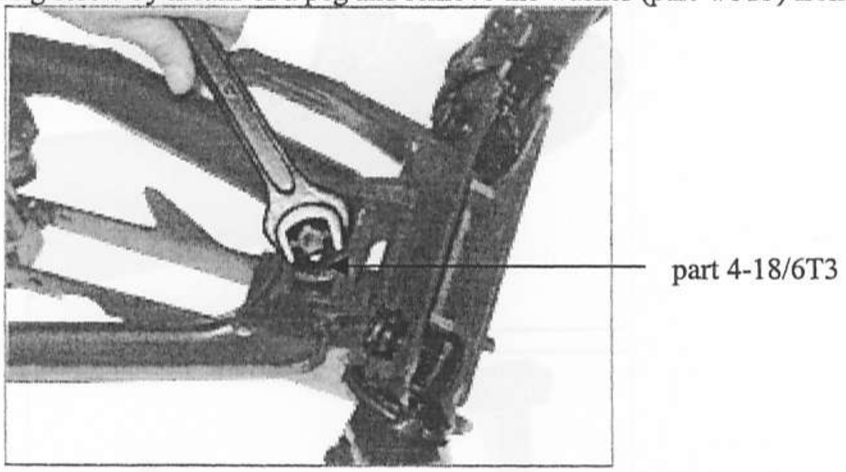
2.2.4. Disassembly of the butt (assy. 1/6T3) from base and of elevating mechanism:



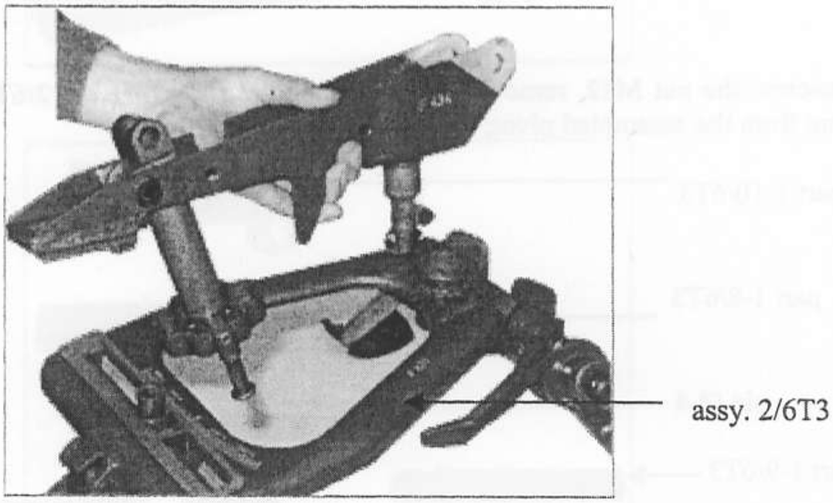
- remove the clamps (part 11/6T3) from the fastening screw (part 5/6T3), by beating;



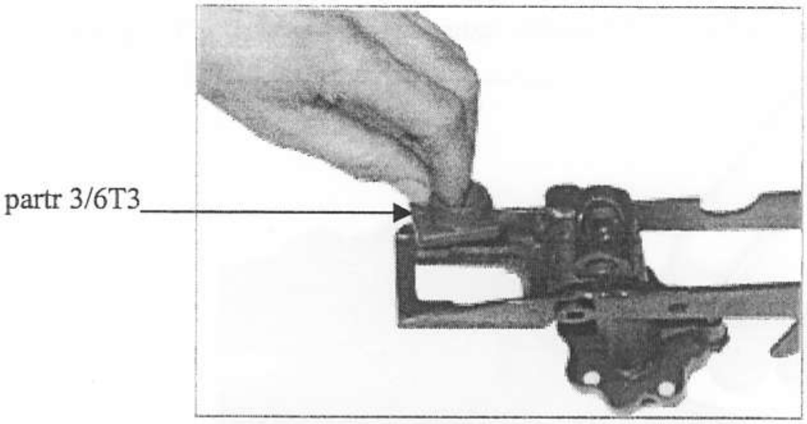
- unscrew the fastening screw by means of a peg and remove the washer (part 4/6T3) from screw;



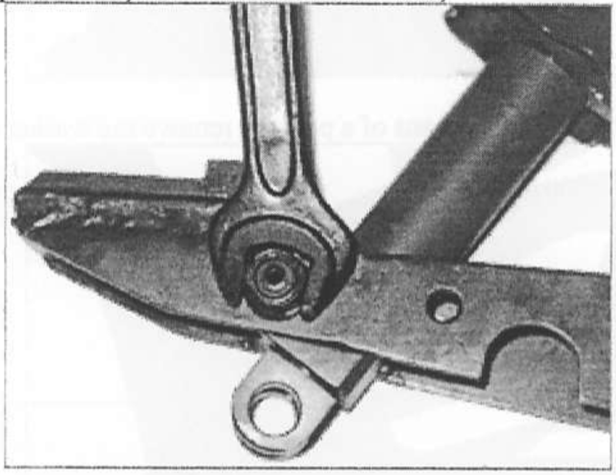
- put the tripod on the back legs and remove the washer and the circlip (part 6/6T3) of pivot (part 1-5/6T3), by removing beforehand the splint and the nut (part 4-18/6T3);

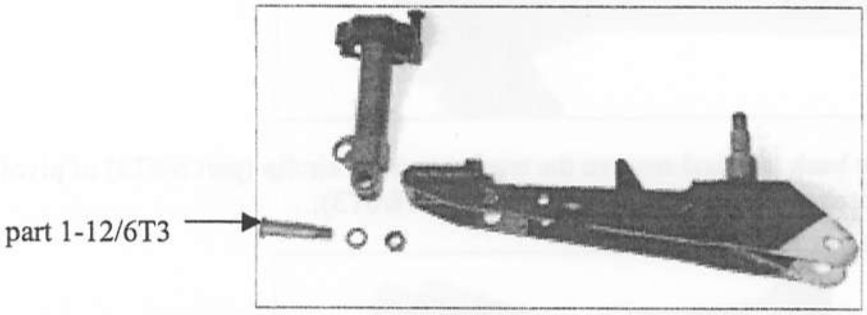


- put the tripod on legs and remove the assembled butt from base (assy. 2/6T3), lifting it up;

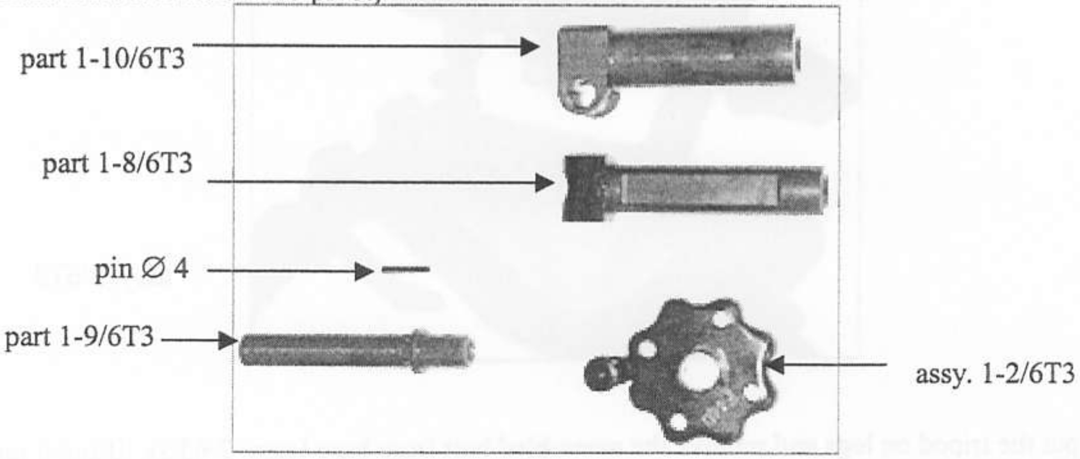


- remove the slide (part 3/6T3) from the assembled butt;



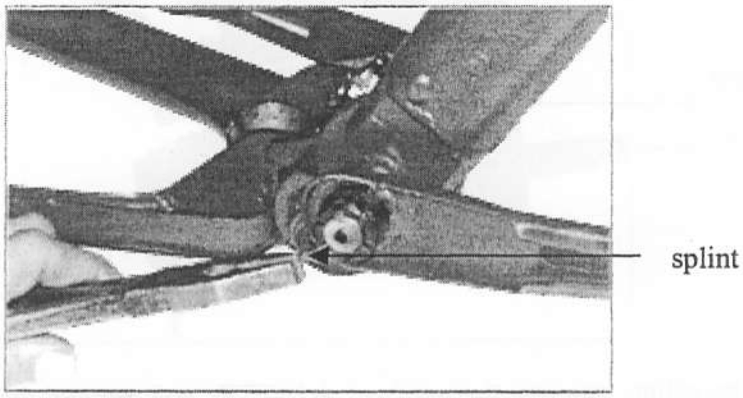


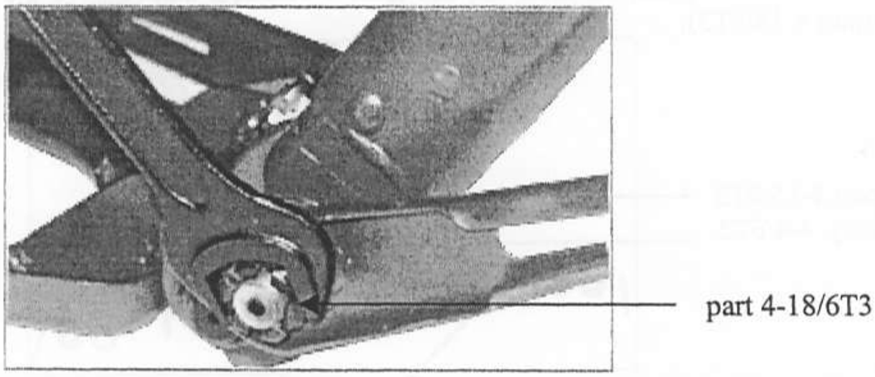
- unscrew the nut M12, remove the circlip and the shaft (part 1-12/6T3); remove the elevating mechanism from the assembled pivot;



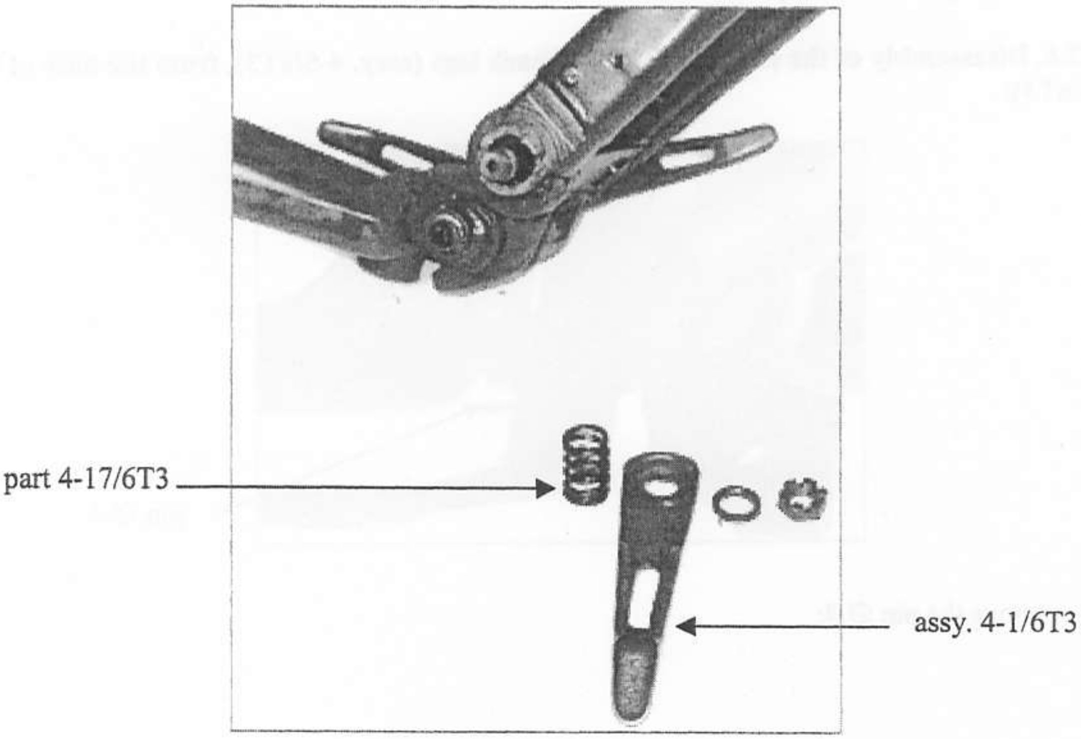
- unscrew the inner tube (part 1-8/6T3) from screw (part 1-9/6T3); remove the pin ∅ 4 and then the hand wheel (assy. 1-2/6T3) from screw; remove the screw from the body of mechanism (part 1-10/6T3).

2.2.5. Disassembly of back legs, from the leg socket, in succession (assy. 4-5/6T3):

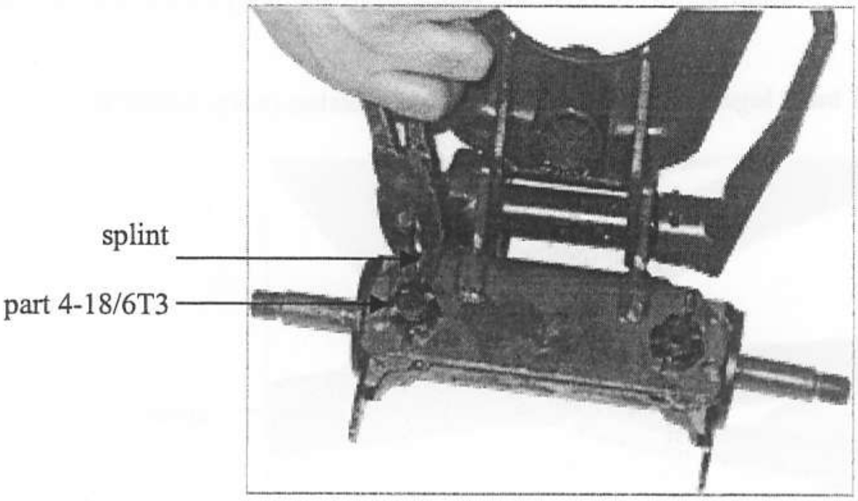




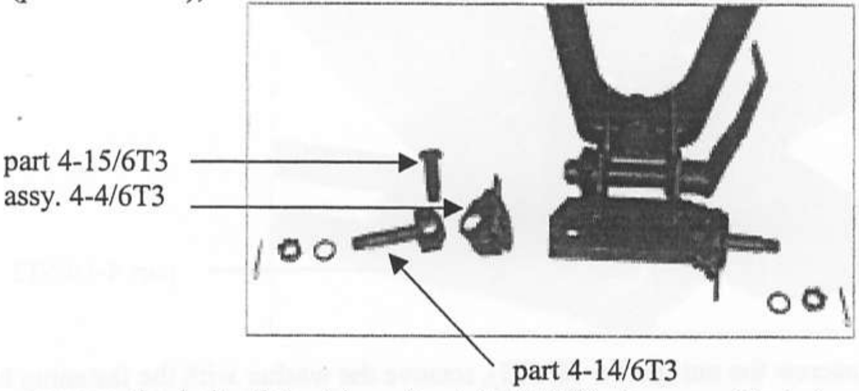
- remove the splint; unscrew the nut (part 4-18/6T3), remove the washer with the fastening handle of the legs (assy. 4-1/6T3);



- remove the spring (part 4-17/6T3) and then the leg;

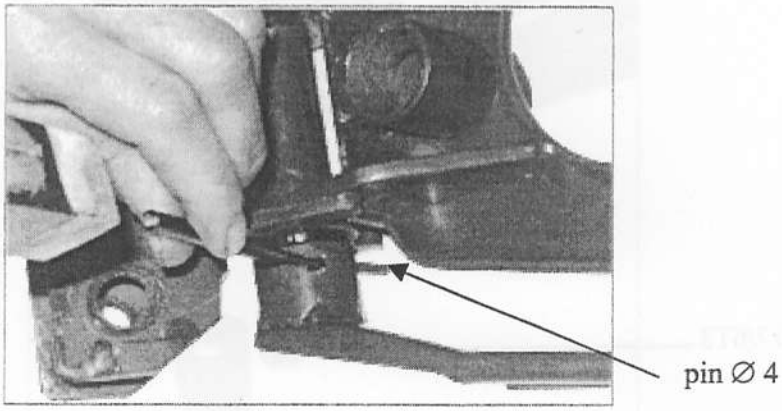


- remove the splint; unscrew the nut (part 4-18/6T3), and remove the washer from the bolt of hinge (part 4-15/6T3);

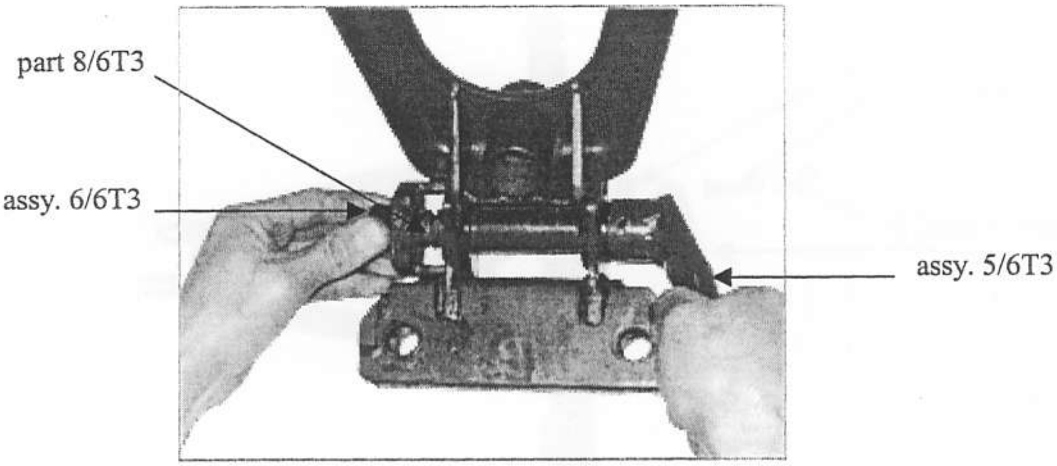


- remove the bolt of the hinge (part 4-15/6T3), the assembled clamp (assy. 4-4/6T3), and the screw of the legs (part 4-14/6T3).

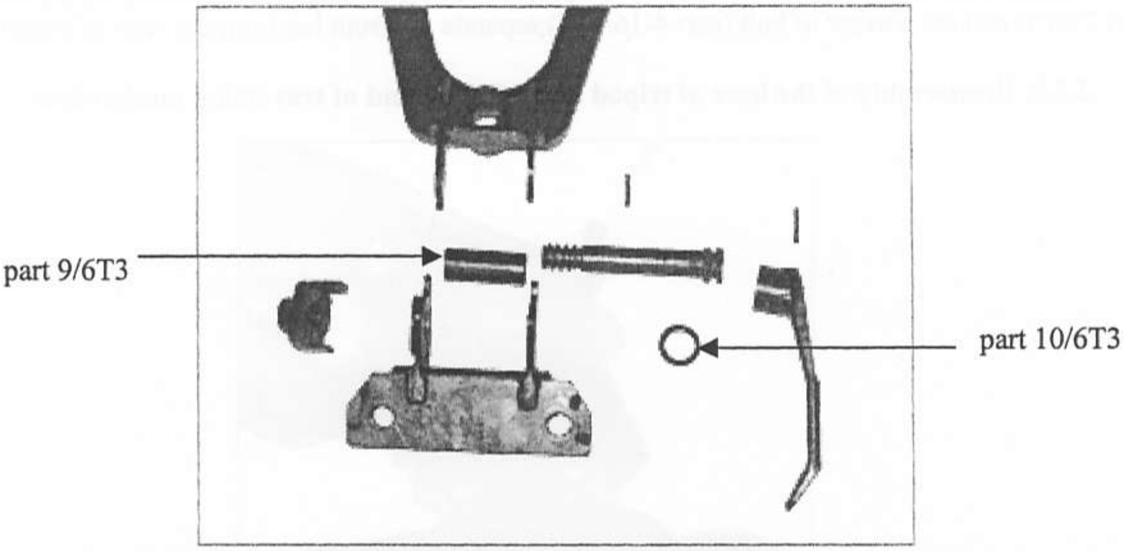
2.2.6. Disassembly of the socket (mount) of back legs (assy. 4-5/6T3), from the base of tripod (assy. 2/6T3):



- remove the pin ∅ 4;

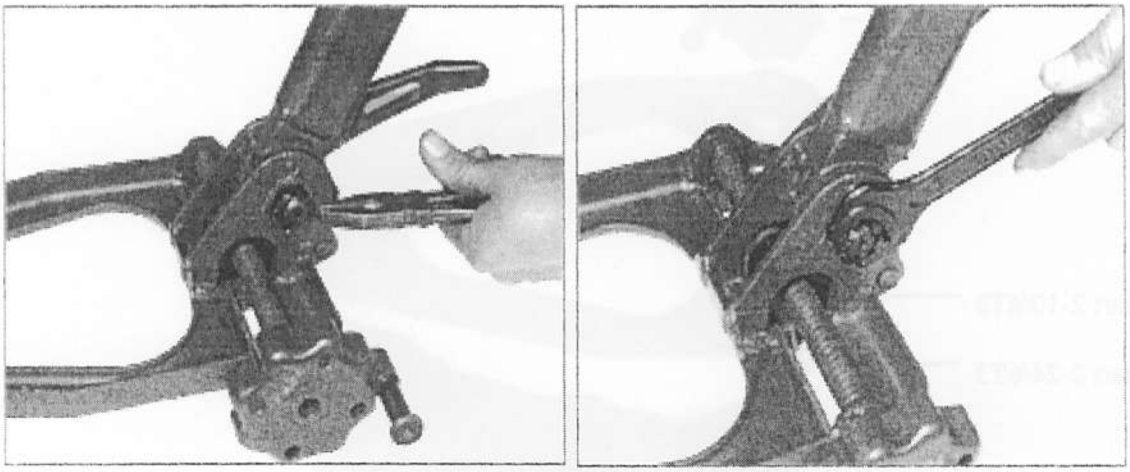


- unscrew the shaft of back legs (part 8/6T3) with the assembled handle (assy. 5/6T3), from the assembled nut (assy. 6/6T3); holding the nut, not to fall;

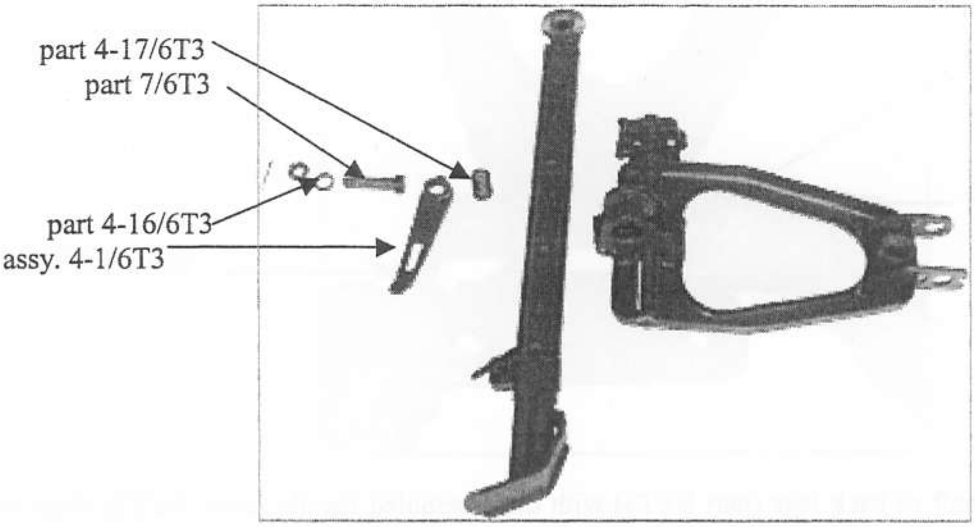


- remove the assembled handle, with the shaft of back legs, the distance sleeve (part 9/6T3), the assembled nut and the washer (part 10/6T3);

2.2.7. Disassembly of the front leg (M356-1.0) from the base of tripod:

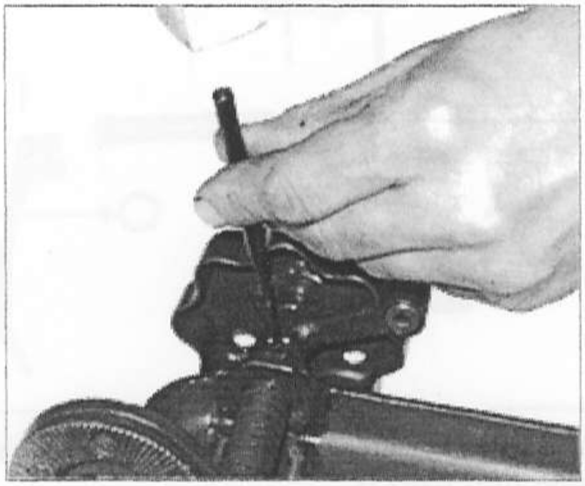


- remove the splint and unscrew the nut (part 4-18/6T3);

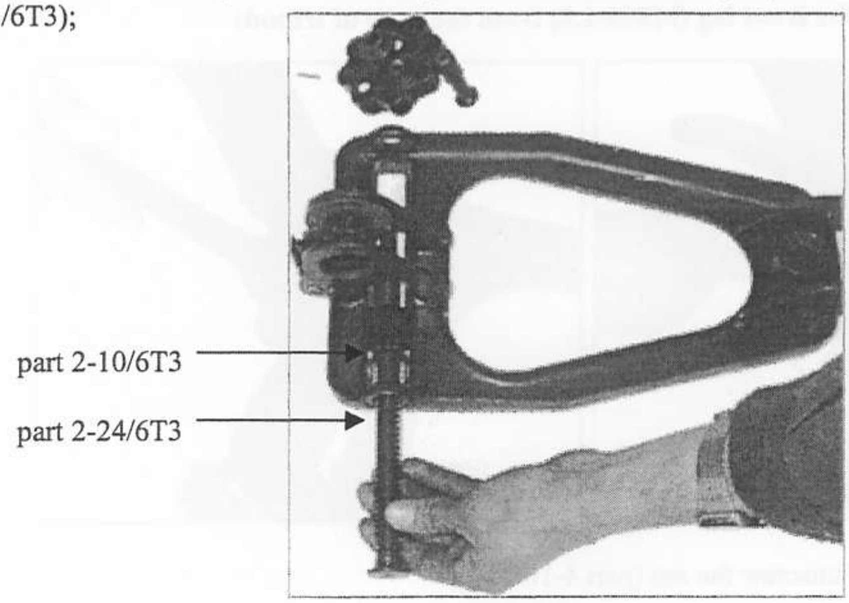


- remove the fastening handle (assy. 4-1/6T3), the spring of hinge (part 4-17/6T3), the bolt of leg (part 7/6T3) and the washer of bolt (part 4-16/6T3);separate the front leg from the base of tripod.

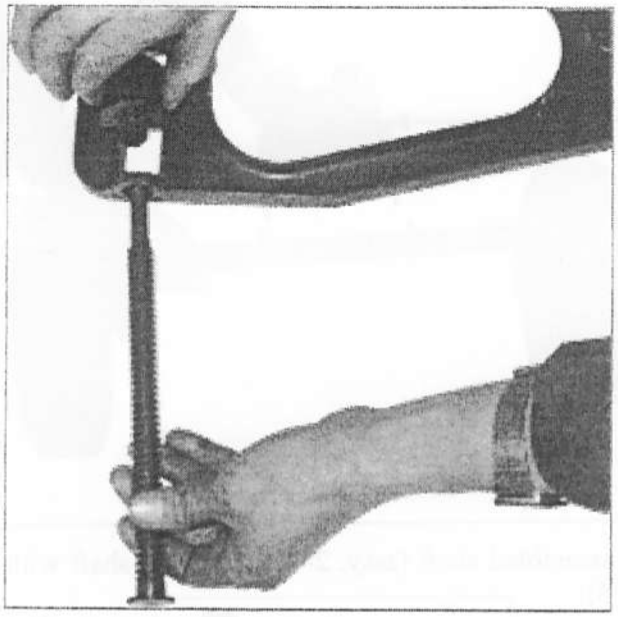
2.2.8. Disassembly of the base of tripod (assy. 2/6T3) and of traversing mechanism:



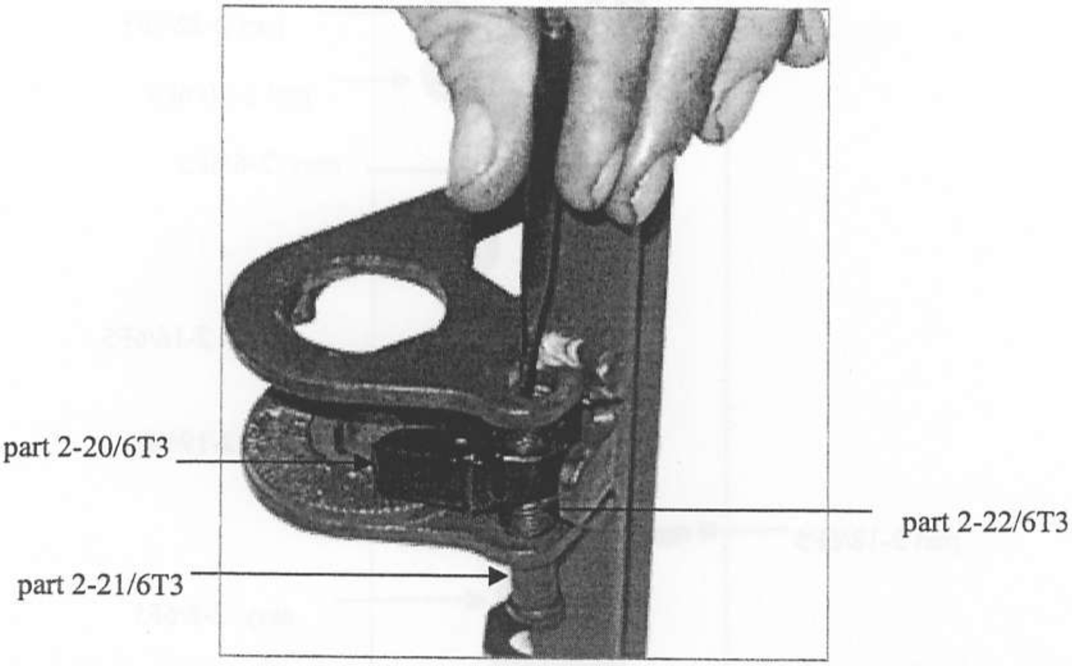
- remove the pin ∅ 3 and separate the hand wheel (assy. 2-5/6T3) from the screw (part 2-23/6T3);



- unscrew the screw with bush (part 2-24/6T3) from carriage (part 2-10/6T3);

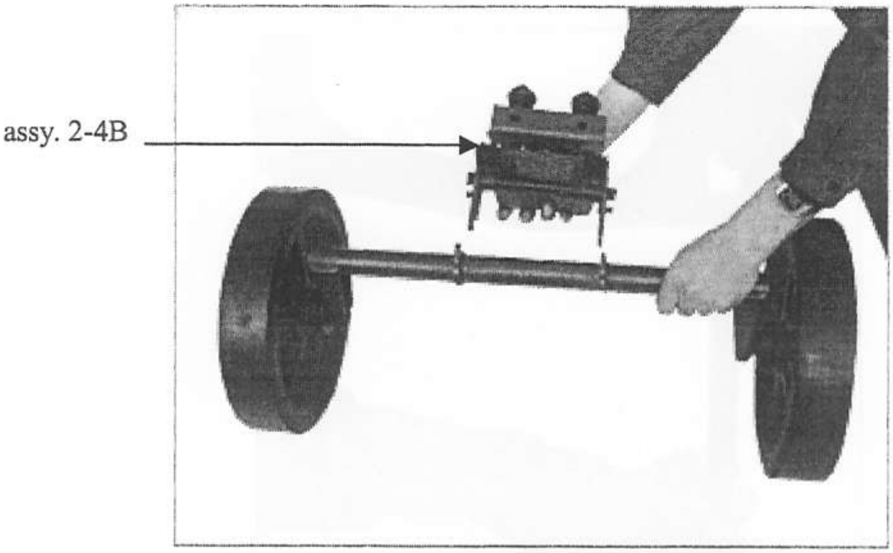


- separate the carriage from the base of tripod;

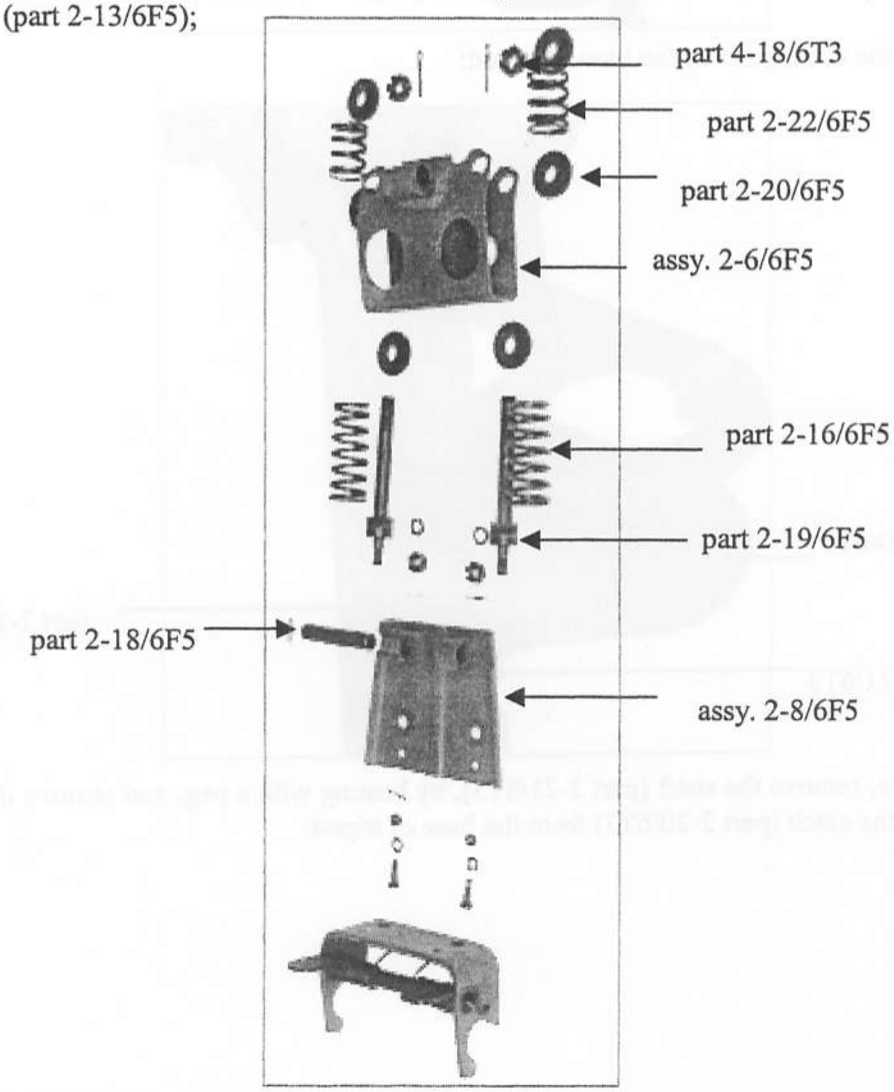


- if need be, remove the shaft (part 2-21/6T3), by beating with a peg, and remove the spring (part 2-22/6T3) with the catch (part 2-20/6T3) from the base of tripod.

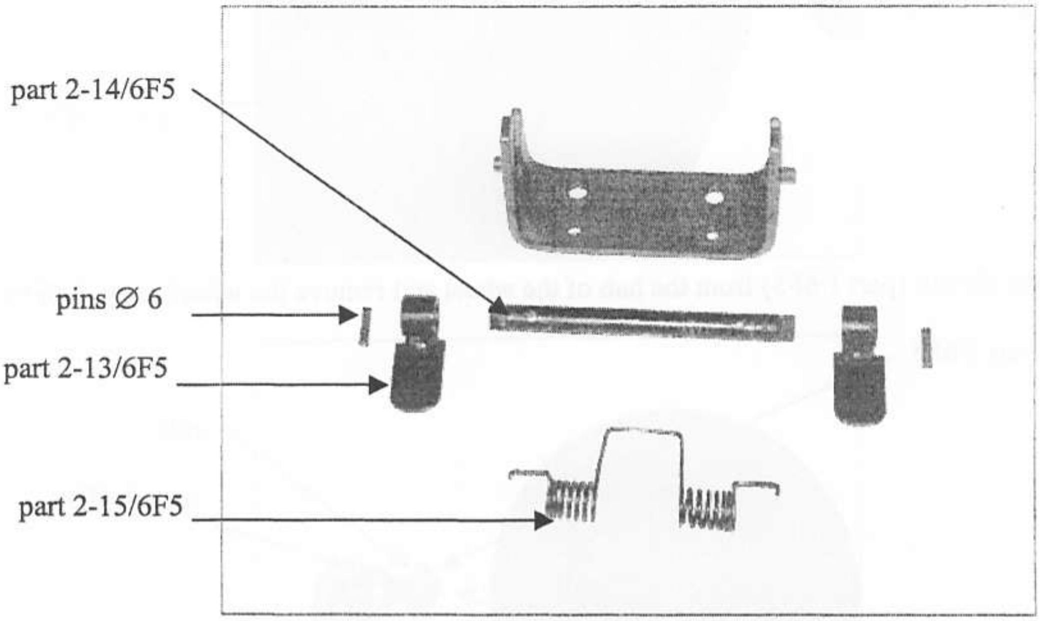
2.2.9. Disassembly of the wheel carriage (assy. 6F5):



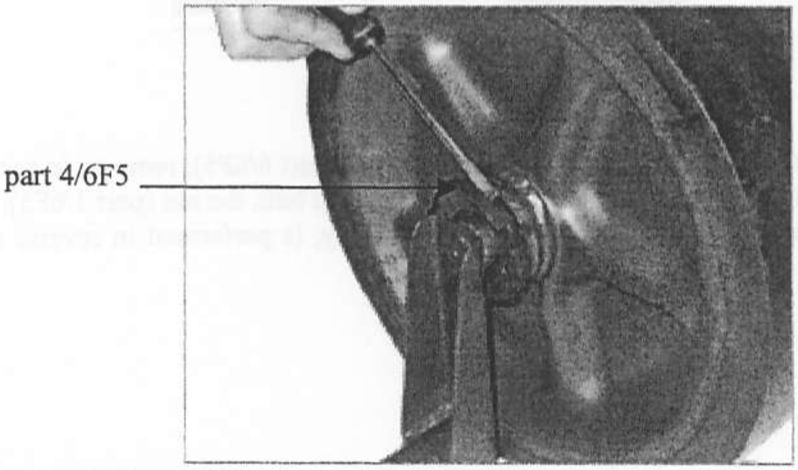
- detach the base of assembled shaft (assy. 2-4B) from the shaft with wheels, by actuating the valve of catch (part 2-13/6F5);



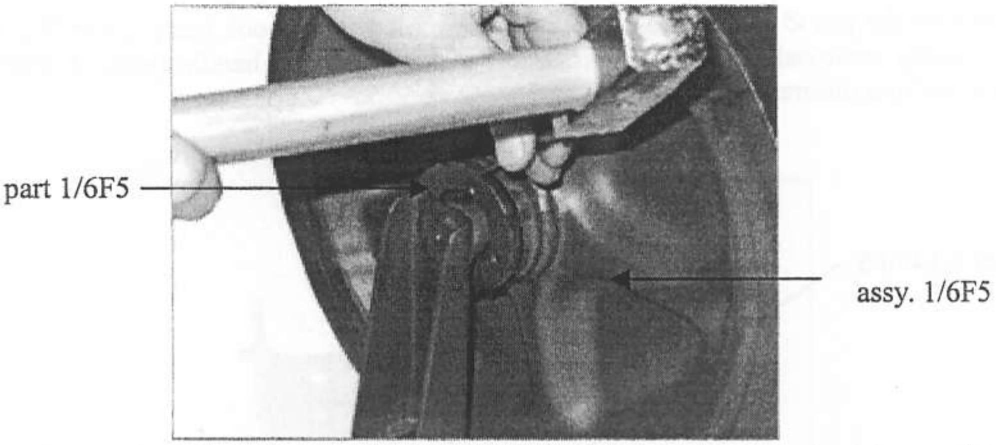
- disassemble, in succession the nut M10 (part 4-18/6T3), the guides (part 2-20/6F5), the rod (part 2-19/6F5) and the springs (part 2-16/6F5) and (part 2-22/6F5), the splints having been removed before; remove the pin ∅ 6 and disassembly the assembled upper hook (assy. 2-6/6F5), the shaft (part 2-18/6F5) being removed beforehand; disassemble the assembled handle (assy. 2-8/6F5), the splint being removed and unscrew the nut M6;



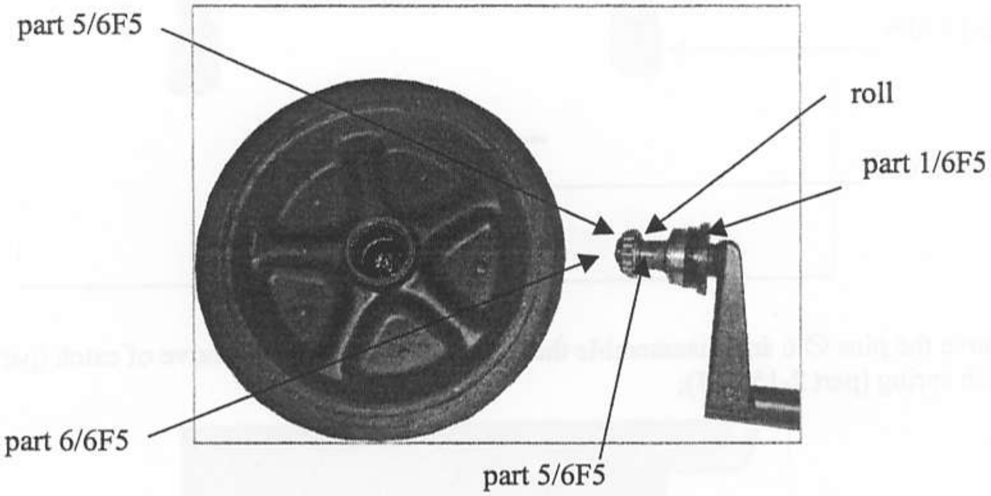
- remove the pins ∅ 6 and disassemble the arm (part 2-14/6F5), the valve of catch (part 2-13/6F5) and the catch spring (part 2-15/6F5);



- loosen and disassemble the catch (part 4/6F5);



- unscrew the nut (part 1/6F5) from the hub of the wheel and remove the wheel (assy. 1/6F5);



- disassemble the nut (part 5/6F5) and remove the washer (part 6/6F5); remove, in succession, the ball (roll) from the shaft, the distance ring (part 3/6F5), the second ball, the nut (part 1/6F5).

The assembly of launcher, after the complete disassembly, is performed in reverse sequence of disassembly.

Part III

Instruction for use of the launcher

1. Selection of firing position and safety precautions, during fire with the launcher AG – 9M

When the firing position is selected, is shall be taken into consideration that, it is not advisable to be some men, at a distance, less 30 m as well as ammunition, explosive substances and less 7 m – vertical strong walls; these condition shall be observed especially for night firings.

The firing position must be chosen, so that the sector of fire shall be obtain, considering the dangerous area behind the launcher AG – 9M.

In fire position, all members of the crew (gunners) must wear artillery protective hats.

During the drill, the fire with grenades to armored plates shall be performed at a minimum distance of 200 m, because of the splinters from armored plate and grenade fly at a distance up to 150 m, sometimes.

During fire with launcher AG – 9M, the first and the second member of the crew must be situated so as to avoid a possible damage caused by the gases of powder, going out from breechblock.

In case of firing on sandy or swampy land and in winter, (when it snows), the round shall put only on pack.

It is necessary to protect especially the propelling change against humidity.

It is not allowed to touch the fight undetonated grenades, after firing.

These grenades shall be destroyed, even on the place of falling, following the safety precautions.

2. Preparation of launcher for firing

In order to prepare the launcher for firing, it is necessary to pass the launcher AG –9M from march to fight position, being necessary the followings:

- when the launcher is equipped with wheel carriage, it must be separated from the base of assembled shaft with the wheels, when firing „sitting down";
- lift the mouth of barrel, until the breechblock reach the ground;
- release the catch of the back legs;
- the back legs rotate down, until they reach the ground, then they detach aside (laterally) and are fastened by the handle of catch;
- release the catch of front leg;
- turn down the handle of front leg, lift the leg until it reach the bolt and secure it by means of catch;
- lowering the mouth of barrel, the AG – 9M launcher is put on legs;
- remove the covers of barrel and breech piece;
- release the stop of march position.

This position of tripod corresponds with the position „recumbent".

To put the tripod in „sitting" position, it is necessary:

- to lift the mouth of barrel of AG – 9M launcher, and to release the catch of front leg;
- the front leg shall be turned back and fastened by means of handle of leg catch;
- lifting the breech piece of AG – 9M launcher, turn down, completely the handle of catch of back legs clip, then they turn in front up to contact;
- fasten up the back legs, rotating the clamping handle completely;
- the launcher AG – 9M shall be cleaned, the channel of barrel; it is necessary to remove the dust, oil mud in the channel of barrel;
- the channel of barrel and chamber shall be wiped, until drying;
- the breechblock shall be wiped, until drying;
- take out the optical sight AOAG – 9M, from its box, wipe it, and put it in holder, where it is fastened by screw, rotating the toothed knob until blocking.

3. Utilization of sight mechanism OAG – 9M

3.1. Precautions

For a good operation of sight mechanism AOAG – 9M, when use it; it is necessary to proceed carefully when it is taken from the box, not to be hit.

Also, the operating knobs of the sight mechanism and the screws of adjusting mechanism must be turned gently.

In the orientation of the telescope for indirect aiming to an objective, the switching off lever of azimuth mechanism must be reduced slowly to the operating position.

3.2. Mounting of sight mechanism on launcher

Mounting of sight mechanism on launcher is an operation that must be performed carefully.

After taking it out from the box, the fastening rod of the sight must be carefully wiped, the fastening channel and positioning pins for removing the traces of grease or dirt, that could damage a correct positioning of the sight on launcher.

It is necessary also to wipe the fastening device from the launcher. The interior, the positioning grooves, as well as the fastening bolt of the sight mechanism must be wiped.

Turn the operating wheel of the bolt for fastening the sight mechanism of the fastening device on launcher, until the bolt is in the lowest position.

Put the fastening rod of the sight mechanism into the place of fastening device of launcher, being careful that the positioning pins of the mechanism shall enter perfectly the seats of the device of launcher. Supporting the mechanism by one hand, not to turn, with the other hand actuate the operating wheel of the bolt for setting the sight mechanism in the direction of lifting the bolt, up to fastening of sight mechanism. The sight mechanism is considered to be well set, when the operating wheel of the bolt, cannot be turned without force.

Before putting the sight mechanism on the launcher, it is necessary that all elements of the sight – scales and index, should be at zero, and the optical components cleaned.

3.3. Utilization of sight mechanism

Before firing, the following checks:

- checking of zero positions of the sight for indirect firing;
- checking of zero aiming line for the telescope of indirect firing;
- checking of zero aiming line for direct firing.

Remarks:

For night firing, the illuminating device must be connected to the sight mechanism AOAG – 9M.

When fire with open rear sight mechanism, it is necessary to swing out the breech piece and the sight leaf.

3.4. Inspection of the launcher AG – 9M

Inspection of the AG – 9M is performed as follows:

- check the barrel; the barrel shall not pusent visible swellings with naked eye, in the channel; in case of such failures the launcher shall not be accepted for firing;

- check the operation of blocking mechanism and extractor, as indicated above.

Check the presence of both contacts:

- check working of the electrical mechanism and of electrical circuit of the launcher AG – 9M; on this purpose, open the breechblock, put the diopter (assy. 6/6I8) into the barrel, one of the contact plate is under the both contacts of launcher AG – 9M, so that, the upper bulb shall be pointed to breechblock. The breechblock is closed. Then, perform, a few times, cocking and starting of firing mechanism.

Meanwhile, one of the members of the crew shall watch the bulb through the breechblock.

When the electrical fire mechanism is in good repair as well as the electrical circuit, the bulb lights, on each firing.

On the other hand, when the safety lock is connected, the firing cannot be performed, as the safety lock closes the firing lever.

When the breechblock is opened, in order to remove the diopter (assy. 6/6I8), it is important that it shall not fall on hard objects.

Check working of the vertical and horizontal aiming mechanism: the knobs of these mechanisms must rotate gently and slowly.

Check the presence and the state of spare part, and accessories.

Check the aiming devices:

Check of the aiming devices consists in preparing the launcher AG –9M and in checking the optical and open rear sights.

For preparation of launcher AG – 9M, when checking the aiming devices, it is necessary:

- to put the launcher AG – 9M on fight position, on a straight land.

On the scratches from the muzzle, thin yarn of dark color shall be extended.

Open the breechblock, put the diopter (assy. 6/6I8) into the circular recess, and then close the breechblock.

Perform the following checking's:

4. Check of the zero positions of the sight for indirect fire

In order to perform this checking, the followings operations shall be performed:

a) Put the launcher on a horizontal surface, at the same time putting the leveling surface of launcher in a position closer to horizontal, in a perpendicular plane, from the legs of tripod.

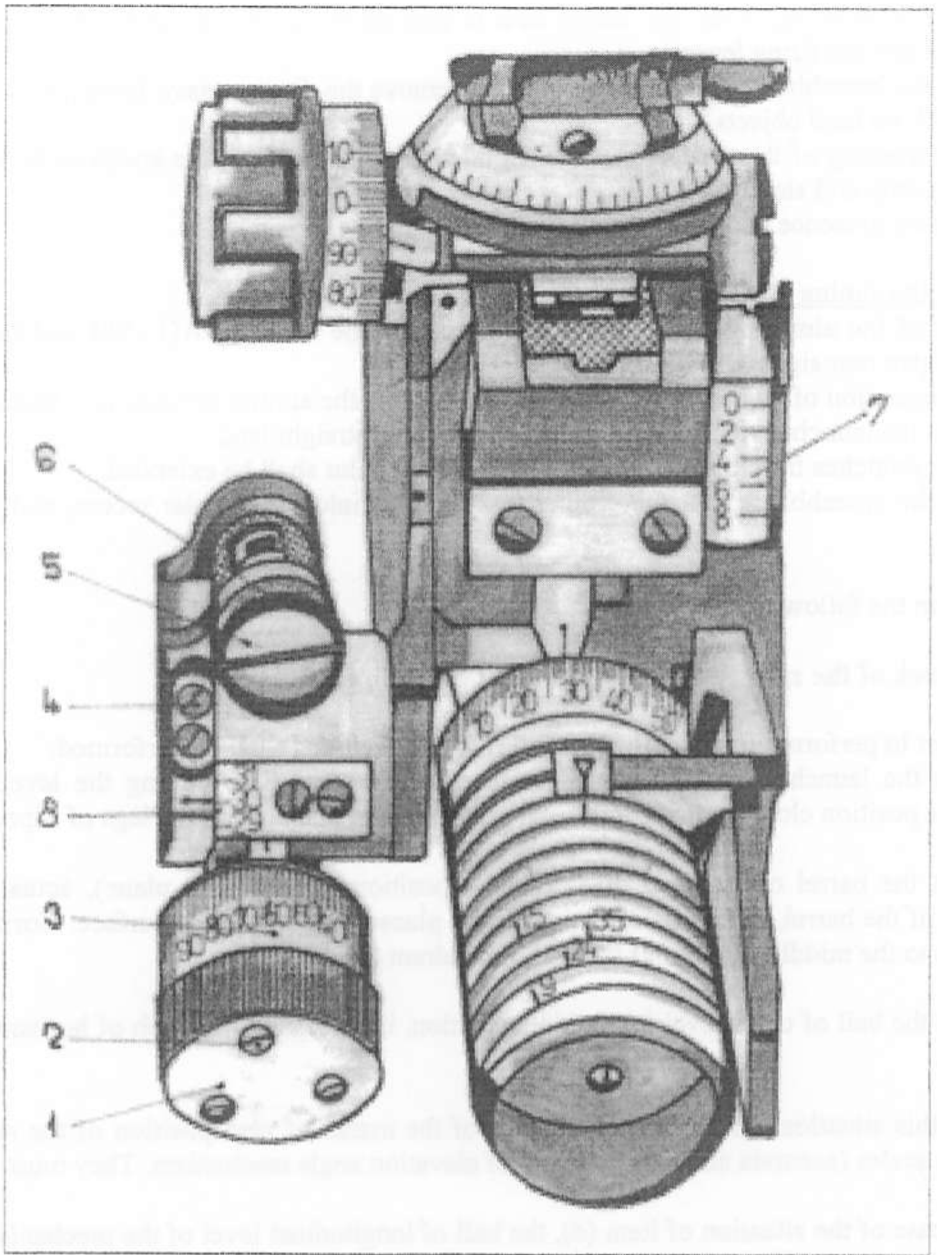
b) Put the barrel of launcher on horizontal position (longitudinal plane), actuating the lifting mechanism of the barrel, by means of the quadrant, placed on the leveling surface. Horizontal position corresponds to the middle position of the ball of quadrant level.

c) Put the ball of cross-level in a middle position, by actuating the knob of horizontal adjustment mechanism.

d) In this situation, check the coincidence of the marks of zero position of the range drum and thousandths scales (accurate and approximate) of elevation angle mechanism. They must coincide.

e) In case of the situation of item (d), the ball of longitudinal level of the mechanism of the angle of site is not in the middle position, and then it must be put to this position, handling the drum of the mechanism of site angles.

f) If, after the level was put into the indicated position, item (e), the index of approximate and accurate thousandths scales of the mechanism of angle of site, are not in the front of division 30 and zero respectively, proceed as follows:



- loosen the three screws (2) placed in the font of the drum (1) and rotate the accurate scale (3) of thousandths until the division zero coincides with index, then clamp the screw (2). Proceed carefully, not to disarrange the level.

- unscrew the two screws (4) and move the index until it coincides with the graduation (8) 30, a then it shall be blocked.

5. Inspection of the sight mechanism

5.1. Inspection of optical sight

Inspection of the optical sight AOAG – 9M consists in checking the zero line of the telescope for direct aiming and of the telescope for indirect aiming.

Inspection of zero line of the telescope for direct and indirect aiming is performed with the test target (Annex 5), put in the front of the launcher, at a distance of 50 ± 0,05 m from the muzzle, perpendicular to the aiming line.

The coordinates of the points APB and APO from the test target in range and direction are calculated, so that, a distance of 800 m, the extension at of barrel axle and of optical axle of the telescope for directs aiming (the inspection mark „+") shall intersect. On the target, then is also a vertical line traced, at a distance of 202 mm from the center of the point APB (the distance on direction between the axle of the channel of barrel and the axle of the telescope for indirect aiming).

Verticality is performed by means of a lead line.

Inspection is performed in the following sequence:

- put the launcher in firing position on a horizontal plane surface;
- in the scratches from muzzle, fasten thin yarn of dark color, having a thickness of 0,3 mm;
- open the breechblock, put the diopter (assy. 6/6I8) into the circular recess and close the breechblock;
- set the mechanism of temperature correction of the sight AOAG – 9M, at the division „0";
- put the launcher to horizontal, after the optical sight and the line of lead line from target;
- aiming through the hole of diopter by means of the traverse and elevating mechanism, proceed, so as to coincide the crossing of the yarns of barrel with the crossing of aiming point APB, from target;
- put the ball of cross level on components;
- check the zero aiming line of the telescope for direct aiming the mark „+", from the grid must coincide with the crossing of the aiming point APO, from target. In case of non-coincidence, rotate the adjusting screws until the mark „+" coincides with the crossing from target of the point APO;
- in order to check the „0" aiming line of the telescope for indirect aiming, put the ball of cross level in the middle position, actuating the knob of horizontal adjustment mechanism of telescope;
- put the scales of elevation angle mechanism in position „0";
- aim by the telescope for indirect aiming and see the overlapping of reticule with the vertical line from the target (the line being at 202 mm from APB). In case of nonconformity, actuate the drum of deflection mechanism, until overlapping and then adjust the scales of mechanism.

5.2. Inspection of open rear sight

It shall be performed in the following sequence:

- on the scratches traced at the cut of barrel, extend a yarn, of dark color, having a thickness of 0,3 mm;
- open the breechblock, put the diopter into the circular recess of barrel, close the breechblock and close the breechblock and set the mechanism of temperature correction at division „0" and the slide of sight at „4";
- aiming by the orifice of diopter, by means of aiming mechanism, overlap the crossing of launcher wines with APB, from the test target;
- the aiming line passing through the notch of slide and the top of breech piece must coincide with APM. Adjust the front sight vertically (screwing or unscrewing it) and horizontally (moving the bush).

6. Assembling of the rounds with grenade

Before firing, it is necessary to check the grenade, where the starting charge is connected, and then remove the safety cap from the nose of fuze.

At firing in the rainy weather, the fuze cap won't is taken of from the fuze head.

The rounds, having external damages of the elements, are not capable for firing.

Until the start charge is coupled with the grenade, it is necessary to perform the followings:

- open the case and take out the charge;
- open the bag (with any existing means) and take out the grenade;
- remove the cardboard safety tube from stabilizer and the paper packing from the safety cap of the nose of fuze.

The grenades having the link from the tail fins deteriorated, shall not be admitted for firing.

In order to connect the charge with the grenade, take the grenade with left hand, and powder start charge by right hand, unite the notches of the charge with the thresholds of the tail of grenade, forcing the resistance of the spring, the charge is pushed forward to grenade, up to contact, and the charge is turned to the front; meanwhile, a crack from closing the stop for locking must be heard.

Over stress in connecting shall not be applied.

The rounds, in which the powder charge cannot be connected with the grenades, shall not be accepted for firing.

In order to remove the safety cap from they nose of fuze, it is necessary to take out from the ribbon of safety pin and then remove the cap.

This operation is performed directly, before loading the grenade launcher AG – 9M.

Under this aspect, the round is ready for charging in launcher and firing.

Only the specialized personal, who knows the firing procedures and the safety regulations, shall be accepted for firing.

If the round was not utilized, the launcher AG – 9M shall be discharged and the charge shall be disconnected from grenade; so, the grenade shall be taken by left hand, holding the charge by the right hand, and remove the stop up to contact, by the thumb and forefinger; overcoming the resistance of spring, the charge shall turn back, the charge shall be disconnected from grenade and shall be put in the box.

The grenades and the propelling charges are carried by crew in two bags, each launcher being equipped with this. In each bag, three grenades and three propelling charges in containers shall be put. In order to keep them for a long time, the grenades completely assembled (with the fuze screwed) are packed in tight plastic bags and put in wooden cases, by six pieces.

7. Assembling of the rounds, with 73 mm explosive round

The rounds shall be put in cases, in firing position.

The propelling charges and the bombs shall be taken out from cases in firing position before fire as follows:

- open the container and remove the charge;
- remove the packing from charge;
- hold the bomb by left hand, and the powder charge by right hand, unite the notches of charge with the thresholds of tail of bomb, farcing the resistance of spring, up to rest; rotate the charge without over stress, until locking, producing a light crack.

After assembling, check the accuracy of mounting. The rounds showing a play of stabilizer (tail fin), those ones having the tail fins and stabilizer deformed, crooked, the little bag with powder being broken or poorly sewn, the wet charges or with other failures, shall not be admitted for firing.

In summer, in firing position, the rounds shall be kept, in the dark (shade), protected against sunbeams.

The explosive rounds shall be delivered in wooden cases, by 8 pcs. in a case. The explosive rounds having the fuzes assembled, shall be put in tight polyethylene bags and there put in the framework of the case, and the propelling charges in plastic containers, packed tight in paper, by two, and then are put in the case.

8. Loading and unloading, preparing for fire, aiming of the launcher AG – 9M to the target, firing and extraction of the elements of starting charge

For loading of the launcher AG – 9M, it is necessary:

- to open the breechblock;
- to put the assembled round in the breech piece of barrel, and to push forward up to contact;
- close the breechblock.

The second member of crew shall perform loading.

The handle of generator unit shall be turned forward, completely.

The second member of crew shall also perform cooking of generator handle, and then he shall stay in his place, again, after loading.

Remarks:

Depending on fight situation, the firing lever of launcher AG – 9M loaded can be blocked by safety lock.

In this position, the launcher is prepared for firing.

9. Firing with direct aiming

Firing with direct aiming is performed as follows:

- the indexes of horizontal adjustment mechanism must coincide;
- enter the temperature correction as follows:
  - for the temperature range – 40°C ÷ – 10°C, put the mark „–" on index;
  - for the temperature range – 10°C ÷ + 10°C, put the mark „0" on index;
  - for the temperature range + 10°C ÷ + 50°C, put the mark „+" on index.

All this corrections shall be made, in case of firing with hallow charge. In case of fire with explosive round, the mark of temperature corrections must be with „0" position, on index.

- actuate the mechanism of launcher in order to reset the target in the measuring scale of target, and determine the distance, up to the target;

- having the distance determined up to the target (or requested), aim, by overlapping, in the middle of target, the thorn corresponding to the firing range. In case of a moving target, enter the lateral correction, being necessary, the aiming being performed this time, by the thorn, or the vertical line, corresponding on the scale „C". When the target moves from the right to left, aiming is performed with the thorns and vertical lines situated on the right of central mark and reverse, when the target moves from left to right, aim the thorns or vertical lines being on the left of central mark.

In case of fire with explosive round, overlapping on the target the horizontal line, from the scale "E", corresponding to the distance given up to target, performs aiming.

This operation (aiming) is performed by handling the elevating and traversing mechanisms of launcher.

10. Firing with indirect aiming

Firing with indirect aiming is performed as follows:

10.1. Actuating the release lever of the worm of drift mechanism by one hand, rotate by the other hand the telescope for indirect firing, until the approximate scale of the drifts, considering the index, in a close position to the drift requested, and then stop actuating the release lever.

10.2. Actuating the drum of drift mechanism, bring the accurate scale of thousandths to the exact value of drift requested.

10.3. Actuating the drum of elevation angles mechanism (or the range scale) and the drum of the mechanism of angle of site, introduce, on the accurate scale, the values requested of the elevation angle (or distance) and of the angle of site, respectively.

10.4. Actuating elevating mechanism of launcher put the ball of level of mechanism for angle of site in the middle position.

10.5. Actuating the drum of horizontal adjustment mechanism, put the ball of cross-level in the middle position.

10.6. Actuating the traversing mechanism of launcher, rotate the aiming telescope for indirect aiming, until the vertical line of the reticule overlap the aiming point. If, the balls of the two levels changed their position, without modifying the aiming (the vertical line of reticule remained in coincidence by the aiming point), put the balls again in the middle position, actuating again the elevating mechanism of launcher, and respectively the horizontal adjustment mechanism of launcher.

11. Performing of night firing

When firing during the night, proceed the same way as daytime firing.

On this purpose, for illumination of reticule of the two telescopes, and of various scales and levels, use the illuminating device (lamp) that is connected to the buttery, existing in the carrying bag.

As for illuminating, the two reticules the same lamp is used, it shall be moved, if need be, for the telescope for direct aiming, or for the telescope of indirect aiming.

In order to put the lamps on dovetail guides, proceed as follows:

- press the locking bolt, completely;
- put the lamps on dovetail guide;
- release the blocking bolt, checking if its spur entered the notch made in dovetail guide. This time, the lamp is put on the guide, accordingly.

Remarks:

When the good operation of illumination at day is checking, it is necessary to put a rubber cap on the objective of sight mechanism.

For aiming of launcher AG –9M to the target, by means of open rear sight, it is necessary:

- to put the fore sight and leaf sight in fight position;
- set the required division on the scale of temperature corrections. The slide of the sight is put on the division requested from the leaf of sight;
- rotating the knobs of elevating and rotation mechanisms, overlap the aiming line, passing through the notch of sight slide and the top of fire sight, with the aiming point.

To fire, it is necessary to press the firing lever (if the lever was blocked by safety lock – the first member of crew unblocks the firing lever, actuating the safety lock).

Remarks:

In case misfire, it is necessary to wait for a minute, then open the breechblock completely, the round rotates at 45° ÷ 90° and push the round again, then close the breechblock, perform closing, cock the handle of generator unit and repeat the starting.

If non-operating repeats, wait for a minute, then the launcher is unload.

For launcher unloading, in case of non-operating, it is necessary to block the firing lever with the safety lock, open the breechblock slowly, up to contact, and using the gloves, extract the round from the barrel.

The rounds undetonated must be handed over to warehouse.

In order to unload the launcher AG – 9M after firing, it is necessary to open the breechblock suddenly; meanwhile, the elements of the starting mechanism after fire shall be removed from pushers.

If opening of the breechblock, is nod performed enough suddenly – the elements of starting charge can go out from the barrel, but they shall not fall outside – this time the gunner uses the gloves and extract by hand.

If it is necessary to unload the launcher AG – 9M, without firing, the firing lever shall be blocked by safety lock, the breechblock shall be open slowly and then extract the round from the barrel of launcher.

The barrel must be orientated to firing direction, when the launcher AG – 9M is unloaded.

The round extracted from the barrel, depending on fight situation, can be disassembled and the starting charge too, then it shall be put in the box.

For round disassembly, it is necessary to remove the springy bush from the starting charge and to turn the grenade until it overlap with recess – them the grenade shall be disconnected from starting charge.

12. Passing the launcher AG – 9M from fight position, to march (travel) position

To perform this operation, it is necessary:

- to make sure that the launcher AG – 9M is unloaded and if the handle of generator is brought down;
- take out the sight mechanism AOAG – 9M, wipe it, and put it in its box;
- grease the channel of barrel and the chamber;
- cover the barrel with the hood and also the breech piece of barrel;
- tripod shall be folded for march on this purpose:
  - the barrel of launcher AG – 9M is placed along the shaft of tripod;
  - block the barrel on the base with the fastening lever in march position;
  - put the front leg in position „0";
  - release the fastening handle of front leg;
  - the front leg shall be turned upwards (the foot must contact the barrel);
  - fasten the front leg with the fastening handle of the leg;
  - release the fastening handles of back legs and then lift in parallel;
  - the legs shall be twisted in front by pulling them along the barrel;
  - if there is a bogie, the shaft with wheels is put at the base of assembled shaft.

In this position, the launcher AG – 9M is carried by the crew or is put in the packing case.

Remarks:

The launcher AG – 9M can be carried on the battlefield, without swinging out the legs.

13. Possible operating troubles of the mechanisms of launcher AG –9M. Causes and remove procedures.

Trouble	Cause	Possibilities to remove
0	**1**	**2**
Misfire	Unsuitable contact between membrane and contactors	Rotate the round at 45° ÷ 90°
	The breechblock is not closed completely	Close the breechblock, check that the handle is twisted entirely, clockwise
	The electrical primer of round is not good	Change the round
	Contactors are dirty or faulty	The contactor shall be cleaned, not changed by other new ones
	One or both contactors are lacking	Mount the contactors lacking
The round is put in hardly	The channel of barrel or the rounds are dirty	Wipe the channel of barrel and the round
	The round presents traces of hits on bourrelet	Change (replace) the round
Breechblock incomplete closed	The recess of breech piece of barrel is dirty	Clean the breech piece of barrel
	Pushers are dirty	Clean the pushers and their places in barrel
Wedge blocked	Closing mechanism is dirty	The components of closing mechanism shall be cleaned and greased
Breechblock blocked	The clamping lugs or catch are dirty	The clamping lugs and catch shall be cleaned

Part IV

Maintenance and storage of the launcher

1. Maintenance and storage of launcher

1.1. The places and conditions in which the launchers AG – 9M, shall be kept and stored must provide permanently good technical means, a possibility for putting it into soon as possible.

1.2. The warehouses for maintenance and storage must be made of wall, equipped with doors, windows, to provide a suitable illumination and ventilation, safety for materials, and possibility of an easy evacuation.

1.3. The warehouses must be equipped with facilities for preventing and extinguishing the fire.

1.4. The roof of warehouses can be made of sheet, tile or concrete and must have a suitable inclination for discharge of water.

1.5. The warehouses must be dry, not to penetrate the water dust and snow.

1.6. The launchers AG – 9M are kept in packing or removed from it, in fight position, having the hoods put on them.

1.7. In the units, the launchers are kept in closed rooms or under the shed.

1.8. The sight mechanism shall be kept in its box.

1.9. Maintenance for a long time shall be performed as per instructions for maintenance and storage of weapon and ammunition of the units in force.

1.10. The temperature of the rooms for storage, must not be below +8°C.

1.11. In case of storage on open platforms or under sheds, the launchers shall be covered with special waterproof tarpaulins.

1.12. The kit of space parts, sight mechanism and other accessories, which are not secured no detachable on launcher, are stored in warehouses.

Kit 1/1 of the sight mechanism AOAG – 9M

The kit of the sight mechanism of launcher AOAG – 9M (kit 1/1) is compossed of:

No.	Name	Pieces	Obs.
0	**1**	**2**	**3**
1	Sight mechanism AOAG – 9M	1	
2	Box of sight mechanism	1	
3	Individual lot of spare parts, tools, accessories:		
	- level in cover;	1	
	- ampoule of level;	1	
	- spare bulbs in the box;	8	2 boxes
	- screwdriver;	1	
	- illuminating device – the sight with battery and carrying bag;	1	
	- commander's illuminating device, with battery and carrying bag;	1	
	- light filter in cover;	1	
	- hood;	1	
	- cloth.	1	
4	Technical book (manual)	1	
5	Manual of the sight mechanism	1	

Kit 1/6 of the sight mechanism AOAG – 9M

The kit of sight mechanism of AOAG – 9M (kit 1/6) is composed of:

No.	Name	In house code, standard	Pieces
0	**1**	**2**	**3**
1	Level in cover	1.827.01.015.0	3
2	Ampoule in cover	1.827.01.028.0	3
3	Light (optic) filter in cover	1.827.02.000.0	2
4	Eyepiece cap	2.827.01.009.1	3
5	Limiter	2.953.00.167.0	2
6	Eye guard	2.953.07.017.0	3
7	Lamp of 1 – 2,5 V/0,2 A	7624 – 90	16
8	Screwdriver	NII 99008 – 72	2

The kit 1/50 of the sight mechanism AOAG – 9M

It is composed of:

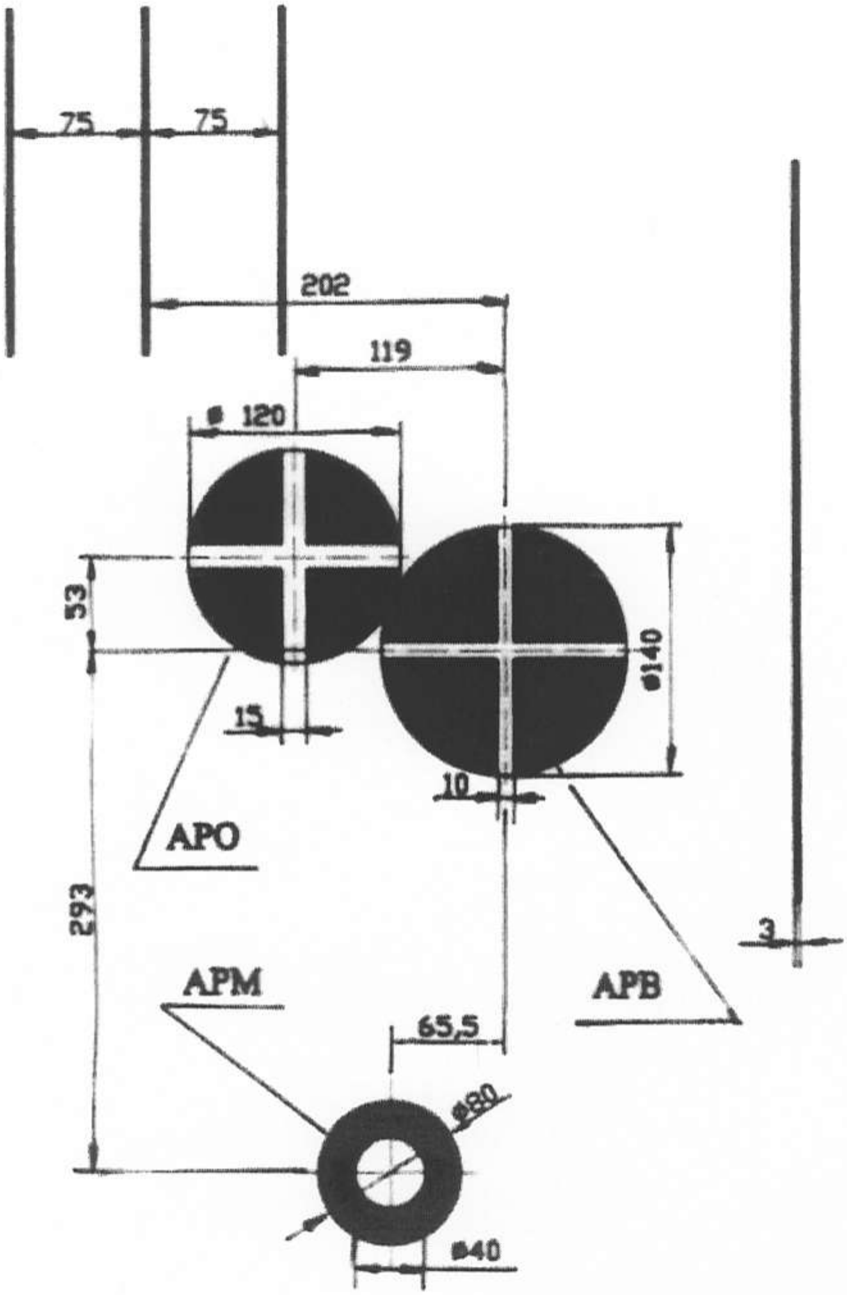
No.	Name	In house code, standard	Pieces
0	1	2	3
1	Sight mechanism AOAG – 9M	1.827.01.000.0	5
2	Guide	1.827.01.005.0	3
3	Objective lens in cover	1.827.01.007.0	1
4	Eyepiece	1.827.01.008.0	1
5	Lever in cover	1.827.01.015.0	12
6	Reticule in cover	1.827.01.023.0	2
7	Ampoule in cover	1.827.01.028.0	12
8	Optic (light) filter in cover	1.827.02.000.0	3
9	Hood	1.827.03.000.0	3
10	Illuminating device for AOAG – 9M	1.827.05.000.0	3
11	Eyepiece cap	2.827.01.009.1	5
12	Light conductor	2.827.01.011.0	5
13	Plug	2.827.01.012.0	5
14	Ring	2.827.01.027.0	2
15	Spring	2.827.01.030.0	5
16	Bolt	2.827.01.031.0	5
17	Screw	2.827.01.034.0	2
18	Telescope 1 eyepiece	2.827.01.055.0	2
19	Spring	2.827.01.077.0	12
20	Spring	2.827.01.084.0	12
21	Sight	1.953.07.000.0	5
22	Prism with gaskets	1.953.07.111.0	5
23	Reticule in cover	1.953.15.000.0	10
24	Eyepiece with reticule	1.953.16.000.0	5
25	Eyepiece doublet	1.953.16.102.0	10
26	Bag for batteries and illuminating device	1.953.22.002.0	12
27	Limiter	2.953.00.167.0	10
28	Spring	2.953.04.117.0	12
29	Eye guard	2.953.07.017.0	12
30	Battery of storage in case	1.957.07.008.0	12
31	Screwed pin with toper top M 2x3	3.111.243.1.51 NI 255 – 73	10
32	Screwed pin with rounded top M 2,5x3	3.421.017.1.51 NI 1527 – 71	5
33	Countersunk screw M 2x6	3.045.246.1.51 NI 62 – 73	10
34	Countersunk screw M 2,5x6	3.045.326.1.51 NI 62 – 73	10
35	Countersunk screw M 3x10	3.045.410.1.51 NI 62 – 73	10
36	Round nut with notch AM 2	3.361.004.8.51 NI 1528 – 71	3

0	1	2	3
37	Lamp 1 – 2,5 V/0,2 A	7624 – 90	30
38	Screwdriver	NII 99008 – 72	2
39	200 ball 3^{-60}_{+60}	5906 - 76	3

Annexe 4

List of the kits 1/1, 1/6 and 1/50 of the launcher AG – 9M

No	Drawing number	Name	Kit 1/1		Kit 1/6		Kit 1/50	
			Pcs	Place packing	Pcs	Place packing	Pcs	Place packing
0	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**
		SPARE PARTS						
1	Assy. 3/6G4	Assembled shaft	-		3	6 Ia 33	5	6 Ia 34
2	Assy. 5/6G4	Contactor	2	5240	4	6 Ia 33	50	6 Ia 34
3	Assy. 1-11/6G4	Assembled catch	-		2	6 Ia 33	5	6 Ia 34
4	M356/4M-15	Spring	-		-	-	5	6 Ia 34
5	Assy. 6-7A/6G4	Generator unit	-		1	6 Ia 33	6	6 Ia 34
6	Assy. 6-11/6G4	Assembled conductor	-		2	6 Ia 33	6	6 Ia 34
7	Assy. 6-14/6G4	Assembled pusher	-		1	6 Ia 33	5	6 Ia 34
8	Assy. 6-17A/6G4	Conductor with assembled barrel	-		2	6 Ia 33	6	6 Ia 34
9	1-3/6G4	Catch	-		2	6 Ia 33	10	6 Ia 34
10	1-4/6G4	Catch spring	-		3	6 Ia 33	15	6 Ia 34
11	1-7/6G4	Catch spring	-		1	6 Ia 33	5	6 Ia 34
12	1-18/6G4	Catch spring	-		4	6 Ia 33	15	6 Ia 34
13	1-21/6G4	Pusher	-		4	6 Ia 33	10	6 Ia 34
14	2-7/6G4	Wedge	-		-	-	4	6 Ia 34
15	6-31/6G4	Spring	-		1	6 Ia 33	10	6 Ia 34
16	17475-74	Screw M4x20	-		4	6 Ia 33	10	6 Ia 34
17	3-2234-74	Pin ∅ 3 Pr 22ax18	-		2	6 Ia 33	15	6 Ia 34
18	3-2234-74	Pin ∅ 4 Pr 22ax30	-		2	6 Ia 33	15	6 Ia 34
19	397-66	Splint 3,2x25	-		4	6 Ia 33	8	6 Ia 34
20	316/92	Lamp sm20; 5V/0,115 A	-		6	6 Ia 33	50	6 Ia 34
		TOOLS						
1	Assy. 1/6I8	Hammer GOST 18648-73	1	5240	-		1	6 Ia 34
2	Assy. 3/6I8	Brush	1	5240	-		1	6 Ia 34
3	Assy. 4/6I8	Assembled wiper	1	5240	-		1	6 Ia 34
4	Assy. 5/6I8	Assembled brush	1	5240	-		1	6 Ia 34
5	Assy. 6/6I8	Diopter	1	5240	-		1	6 Ia 34
6	7917-67	Screwdriver SG0, 8x5x200	1	5240	-		1	6 Ia 34
7	1/6I8	Peg ∅ 3x30x100	1		-		1	6 Ia 34
8	2839-71	Key 17x22	1		-		-	-
		ACCESSORIES						
1	Assy. 1/6Ş17	Front cover (hood)	1		-		1	6 Ia 34
2	Assy. 2/6Ş17	Rear cover	1		-		1	6 Ia 34
3	Assy. 3/6Ş17	Wiper hood	1		-		1	6 Ia 34
4	Assy. 4/6Ş17	Tools bag	1		-		-	6 Ia 34
5	Assy. 5/6Ş17	Brush hood	1		-		1	6 Ia 34
6	Assy. 6Ş17	Carrying bag for 3 products	2		-		2	6 Ia 34
7	10908-75	Quadrant K – 1	-		1		-	6 Ia 34
8	124010-75	Thermo insulating gloves	pair		-		pair	6 Ia 34



The target plan for checking up the aiming devices of the cumulative grenade and explosive bomb launcher